User's
Manual

GREEN Series
Communication Reference

IM 05G01B02-02E

YOKOGAWA
Yokogawa Electric Corporation

IM 05G01B02-02E
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Introduction

This user's manual provides information about internal registers, which is required to implement communication with the GREEN Series of controllers.

The GREEN Series have the following internal registers.

1) D registers

2) B registers <UP550 and UP750 only>

3) I relays

The GREEN Series controllers communicate with a higher-level device via these internal registers.

You are required to understand the communication specifications of higher-level devices, and have knowledge of the communication hardware, language used for creating communication programs, and so on.

* Higher-level devices: PCs, PLCs (sequencers), graphic panels, and others

■ Intended Readers

This manual is intended for people familiar with the functions of the GREEN Series controllers such as control engineers and personnel in charge of the maintenance of instrumentation and control equipment.

■ Related Documents

The following user's manuals all relate to the communication functions of the GREEN Series.

Read them as necessary. The codes enclosed in parentheses are the document numbers.

- ***UT350/UT320 User's Manual***
  (IM 05D01D02-01E to 03E)

  Explains the basic operation of the UT350/UT320 controller.

- ***UT351/UT321 User's Manual***
  (IM 05D01D12-01E to 04E)

  Explains the basic operation of the UT351/UT321 controller.

- ***UT450/UT420 User's Manual***
  (IM 05D01C12-01E to 04E)

  Explains the basic operation of the UT450/UT420 controller.

- ***UT550/UT520 User's Manual for Single-loop Control***
  (IM 05D01C02-01E to 05E)

  Explains the basic operation of the UT550/UT520 controller.

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- ***UT551 with embedded Ethernet User's Manual for Single-loop Control* (IM 05D01C03-01E to 06E)**

  Explains the basic operation of the UT551 controller.

- ***UT551 User's Manual for Single-loop Control* (IM 05D01C04-01E to 06E)**

  Explains the basic operation of the UT551 controller.

- ***UT750 User's Manual for Single-loop Control* (IM 05D01B02-01E to 05E)**

  Explains the basic operation of the UT750 controller.

- ***UP350 User's Manual* (IM 05E01D02-01E to 04E)**

  Explains the basic operation of the UP350 controller.

- ***UP351 User's Manual* (IM 05E01D12-01E to 05E)**

  Explains the basic operation of the UP351 controller.

- ***UP550 User's Manual for Single-loop Control* (IM 05E01C02-01E to 07E)**

  Explains the basic operation of the UP550 controller.

- ***UP750 User's Manual for Single-loop Control* (IM 05E01B02-01E to 07E)**

  Explains the basic operation of the UP750 controller.

- ***UM350/UM330 User's Manual* (IM 05F01D02-01E to 03E)**

  Explains the basic operation of the UM350/UM330 indicator.

- ***UM351/UM331 User's Manual* (IM 05F01D12-01E to 04E)**

  Explains the basic operation of the UM351/UM331 indicator.

- ***GREEN Series User's Manual - Detailed Instructions* (IM 05J01B02-01E)**

  Explains the functions of the GREEN Series controllers in detail.

- ***GREEN Series Communication Function* (IM 05G01B02-01E)**

  Provides detailed information about the GREEN Series controller's communication protocol.

- ***GREEN Series Communication Reference***
  (IM 05G01B02-02E)

  Provides detailed information about the GREEN Series controller's internal registers that can be accessed by communication.

- ***LL100 PC-based Parameters Setting Tool***
  (IM 05G01B12-01E)

  A user's manual for setting the parameters of the GREEN Series controllers from a personal computer.

- ***LL200 PC-based Custom Computation Building Tool***
  (IM 05G01B22-01E)

  A user's manual for creating GREEN Series custom computations on a personal computer.

- ***LL200 PC-based Custom Computation Building Tool User's Reference***
  (for UT750: IM 05G01B22-02E)
  (for UP750: IM 05G01B22-03E)

  An user's manual that describes the functions needed to create GREEN Series custom computations. Refer to this manual if you are not familiar with the types of functions available or how these functions work.

- **Ethernet Communication Functions User's Manual**
  (IM 05G01B52-01E)

  Provides detailed information about the Ethernet communication functions, communication protocol and D registers.

■ Trademarks

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Documentation Conventions

■ Symbols

WARNING

Indicates that operating the hardware or software in this manner may damage it or lead to system failure.

NOTE

Draws attention to information that is essential for understanding the operation and/or features of the product.

TIP

Gives additional information to complement the present topic.

See Also

Gives reference locations for further information on the topic.

■ Description of Displays

(1) Some of the representations of product displays shown in this manual may be exaggerated, simplified, or partially omitted for reasons of convenience when explaining them.

(2) Figures and illustrations representing the controller's displays may differ from the real displays in regard to the position and/or indicated characters (upper-case or lower-case, for example), to the extent that they do not impair a correct understanding of the functions and the proper operation and monitoring of the system.

Notices

■ Regarding This User's Manual

(1) This manual should be passed on to the end user. Keep at least one extra copy of the manual in a safe place.

(2) Read this manual carefully to gain a thorough understanding of how to operate this product before you start using it.

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GREEN Series
Communication Reference

IM 05G01B02-02E 7th Edition

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Revision Information i

1. Functions and Use of D Registers (UT750/UT550/UT520/UT551)

1.1 Overview

This section explains the functions and use of D registers.

D registers store parameter data, flag data and process data of a GREEN Series controller. You can readily use these internal data items by reading from or writing to the D registers.

You can use D registers to perform:

- **Centralized control using a higher-level device**
- **Data exchange by reading/writing data from/to a higher-level device**

1.2 Interpretation of D Register Tables

This section explains how to read the D Register Map tables in this chapter. The numbers listed in the leftmost column are D register numbers ((1) below). The five-digit numbers in the next column are reference numbers used for MODBUS communication ((2) below). The numbers in the column third from left are register numbers in hexadecimal notation used in MODBUS communication programs ((3) below). Each register code name in the D Register Map tables represents a specific process data item, operation parameter, setup parameter or other data items such as a flag. For details on the operation parameters and setup parameters, see the user's manual of UT750/UT550/UT520/UT551.

Name of D Register Map				
D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R

(1) D register number

(2) Reference number (for MODBUS communication)

(3) Hex number (for MODBUS communication program)

Permission of read/write by communication
(An asterisk (*) in this column indicates that the number of writing actions is limited to 100,000.)

■ Names of D Registers

The base names of some D registers are preceded by a combination of a number and then a period, and/or followed by a combination of a period and then a number, as shown in the format Y.□□□.X. (Y: group number; X: loop number)

Examples:

- The name 3.SP.1 means the SP of group 3 and for Loop-1.
- The name OUT.2 means the OUT of Loop-2.

1.3 Classification of D Registers

■ Classification of D Register Map Tables

The table below outlines how the D registers are classified by their numbers in the D Register Map tables.

Table 1.1 Classification of D Registers

Register No.	Area and data categories		Description	Reference
D0001 to D0049	Process data area (Note 1)	Data displayed for operation	PV, SP, OUT, and others	Section 1.4
D0050 to D0100	User area (Note 2), represented by shaded cells in the table	—	If a graphic panel is used, this area is used for communication with the graphic panel.	Section 1.4
D0101 to D0200	Cannot be used			
D0201 to D0230	Operation parameters (Note 1)	Operation mode parameters	A/M, C/A/M, MOUT, and others	Section 1.5
D0231 to D0300		Operation-related parameters for Loop-1 and -2	AT, SC, BS, FL, and others	Sections 1.6 and 1.7
D0301 to D0700		PID parameters for Loop-1 and -2	P, I, D, and others	Sections 1.6 and 1.7
D0701 to D0800	Operation parameters	Ten-segment linearizer parameters and USER parameters	1.A1 to 1.PMD and others	Section 1.8
D0801 to D0900	Display messages	Message texts	Display messages (each comprising up to 20 alphanumeric characters)	Section 1.8
D0901 to D1000	Setup parameters (Note 1)	Control action parameters for Loop-1 and -2	SP, ALM, CTL	Section 1.9
D1001 to D1100		Loop-common function parameters	AIN, RET, TRND, LOCK	Section 1.9
D1101 to D1200		Display and I/O configuration parameters	CSEL, DO, DI, C.PYS	Section 1.9
D1201 to D1300		Controller mode, PV input, and control output parameters	UTMD, IN, OUT, R485, INIT	Section 1.10
D1301 to D1500	User definitions (custom computation area)	Input block	Block input/output and module output	Sections 1.11 and 1.12
D1501 to D1700		Output block		

Note 1: Data for process values, operation parameters and setup parameters are stored in the types (PV input range, PV input range span, %, or ABS without the decimal point) indicated in the Operation Parameter Lists and Setup Parameter Lists of the user s manual of UT750/UT550/UT520/UT551. The OFF and ON states are represented by 0 and 1, respectively. D registers D0001 to D0049 are read-only.

Note 2: When communicating with a graphic panel, do not write to or read from this area (D0050 to D0100) because this area is reserved for 16-bit register data used by graphic panels.

NOTE

It is prohibited to read/write data by communication from/to the registers of blank cells in the register map tables. If you attempt to do so, the UT750/UT550/UT520/UT551 may not operate properly.

1.4 Process Data and User Area

Area for process data									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R	D0051	40051	0032		R/W
D0002	40002	0001	ERROR.1	R	D0052	40052	0033		R/W
D0003	40003	0002	PV.1	R	D0053	40053	0034		R/W
D0004	40004	0003	CSP.1	R	D0054	40054	0035		R/W
D0005	40005	0004	OUT.1	R	D0055	40055	0036		R/W
D0006	40006	0005	HOUT.1	R	D0056	40056	0037		R/W
D0007	40007	0006	COUT.1	R	D0057	40057	0038		R/W
D0008	40008	0007	MOD.1	R	D0058	40058	0039		R/W
D0009	40009	0008	PIDNO.1	R	D0059	40059	003A		R/W
D0010	40010	0009	CSPNO	R	D0060	40060	003B		R/W
D0011	40011	000A	ALM	R	D0061	40061	003C		R/W
D0012					D0062	40062	003D		R/W
D0013					D0063	40063	003E		R/W
D0014					D0064	40064	003F		R/W
D0015					D0065	40065	0040		R/W
D0016					D0066	40066	0041		R/W
D0017					D0067	40067	0042		R/W
D0018	40018	0011	ERROR.2	R	D0068	40068	0043		R/W
D0019	40019	0012	PV.2	R	D0069	40069	0044		R/W
D0020	40020	0013	CSP.2	R	D0070	40070	0045		R/W
D0021	40021	0014	OUT.2	R	D0071	40071	0046		R/W
D0022	40022	0015	HOUT.2	R	D0072	40072	0047		R/W
D0023	40023	0016	COUT.2	R	D0073	40073	0048		R/W
D0024	40024	0017	MOD.2	R	D0074	40074	0049		R/W
D0025	40025	0018	PIDNO.2	R	D0075	40075	004A		R/W
D0026	40026	0019	DEV.1	R	D0076	40076	004B		R/W
D0027	40027	001A	OR.1	R	D0077	40077	004C		R/W
D0028					D0078	40078	004D		R/W
D0029					D0079	40079	004E		R/W
D0030	40030	001D	DEV.2	R	D0080	40080	004F		R/W
D0031	40031	001E	OR.2	R	D0081	40081	0050		R/W
D0032	40032	001F	SMEC	R	D0082	40082	0051		R/W
D0033	40033	0020	DISTS	R	D0083	40083	0052		R/W
D0034	40034	0021	RDISTS	R	D0084	40084	0053		R/W
D0035	40035	0022	PARAERR	R	D0085	40085	0054		R/W
D0036	40036	0023	ALOSTS	R	D0086	40086	0055		R/W
D0037	40037	0024	TIM1	R	D0087	40087	0056		R/W
D0038	40038	0025	TIM2	R	D0088	40088	0057		R/W
D0039	40039	0026	DISP1	R	D0089	40089	0058		R/W
D0040	40040	0027	DISP2	R	D0090	40090	0059		R/W
D0041					D0091	40091	005A		R/W
D0042					D0092	40092	005B		R/W
D0043					D0093	40093	005C		R/W
D0044					D0094	40094	005D		R/W
D0045					D0095	40095	005E		R/W
D0046					D0096	40096	005F		R/W
D0047					D0097	40097	0060		R/W
D0048					D0098	40098	0061		R/W
D0049					D0099	40099	0062		R/W
D0050	40050	0031		R/W	D0100	40100	0063		R/W

Shaded area : User area (You cannot use these registers when a graphic panel is used.)

1.4.1 Process Data Area (Read-only)

Some of the registers in this area (D0001 to D0049, read-only) are designed to represent two or more events, such as errors and statuses, using combinations of bits within the register. If any of the events shown in the following tables occur, the corresponding bit is set to 1. The bit remains 0 if the event does not occur. Note that bits with blank fields in the tables are not in use.

● Bit Configuration of D0001: ADERROR (Input Error)

Bit	Code	Event
0	AD1ERR.st	Input-1 A/D converter error
1	AD2ERR.st	Input-2 A/D converter error (UT750 only)
2	AD3ERR.st	Input-3 A/D converter error
3		
4	AD1BO.st	Input-1 burnout error
5	AD2BO.st	Input-2 burnout error (UT750 only)
6	AD3BO.st	Input-3 burnout error
7		
8	RJC1ERR.st	Input-1 RJC error
9	RJC2ERR.st	Input-2 RJC error (UT750 only)
10 to 15		

● Bit Configuration of D0002: ERROR.1 (PV1 Error)

Bit	Code	Event
0	PV1ADC.st	PV1 A/D converter error
1	PV1BO.st	PV1 burnout error
2	RJC1ERR.st	PV1 RJC error
3		
4	PV1+over.st	PV1 over-scale
5	PV1-over.st	PV1 under-scale
6, 7		
8	RSP1ADC.st	RSP1 A/D converter error
9	RSP1BO.st	RSP1 burnout error
10, 11		
12	C.RSP1ADC.st	RSP1 A/D converter error when RSP1 is used for control
13	C.RSP1BO.st	Burnout error when RSP1 is used for control
14	AT1ERR.st	Auto-tuning error
15		

● D0003: PV.1 (Measured input value [PV] for Loop-1)

● D0004: CSP.1 (Current target setpoint [SP] for Loop-1)

● D0005: OUT.1 (Control output value [OUT] for Loop-1)

- During PID computation, you can read the computation result as is from this register. For example, when the computation result is 75.0%, the register contains a value of “750.”
- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains a value half the PID computation result.

● D0006: HOUT.1 (Heating-side control output for Loop-1 in Heating/Cooling Control)

- During heating/cooling computation, this register contains the heating-side control output value.

● D0007: COUT.1 (Cooling-side control output for Loop-1 in Heating/Cooling Control)

- During heating/cooling computation, this register contains the cooling-side control output value.

● Bit Configuration of D0008: MOD.1 (Operation mode of Loop-1)

Bit	Code	Event
0	A/M1.st	0: AUTO; 1: MAN
1	R/L1.st	0: Local; 1: Remote
2	R/S1.st	0: Run; 1: Stop
3		
4	CAS.st	1: CAS
5	AUT.st	1: AUTO
6	MAN.st	1: MAN
7 to 13		
14	AT1.st	0: Auto-tuning is OFF; 1: Auto-tuning is ON
15		

● D0009: PIDNO.1 (Current PID number for Loop-1)

Bit	Code	Event
0	PIDNO.0	Bit 0 of the current PID number
1	PIDNO.1	Bit 1 of the current PID number
2	PIDNO.2	Bit 2 of the current PID number
3	PIDNO.3	Bit 3 of the current PID number
4 to 15		

From this register, you can read the PID number currently in use in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = on”, which is represented as “0101” in binary notation and as “5” in decimal notation, indicates that the PID number currently being used is 5.

● D0010: CSPNO (Current target-setpoint number)

Bit	Code	Event
0	CSPNO1.0	Bit 0 of CSP (current SP number)
1	CSPNO1.1	Bit 1 of CSP (current SP number)
2	CSPNO1.2	Bit 2 of CSP (current SP number)
3	CSPNO1.3	Bit 3 of CSP (current SP number)
4 to 15		

From this register, you can read the SP number of the target setpoint currently being used in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = on”, which is represented as “0101” in binary notation and as “5” in decimal notation, indicates that the target setpoint value of 5.SP is now being used.

● Bit Configuration of D0011: ALM (Alarm Status)

Bit	Code	Event
0	ALM11.st	‘1’ when alarm 1 for Loop-1 is ON; ‘0’ when OFF
1	ALM12.st	‘1’ when alarm 2 for Loop-1 is ON; ‘0’ when OFF
2	ALM13.st	‘1’ when alarm 3 for Loop-1 is ON; ‘0’ when OFF
3		
4	ALM14.st	‘1’ when alarm 4 for Loop-1 is ON; ‘0’ when OFF
5	OR1.st	‘1’ when sensor grounding alarm for Loop-1 is ON; ‘0’ when OFF
6, 7		
8	ALM21.st	‘1’ when alarm 1 for Loop-2 is ON; ‘0’ when OFF
9	ALM22.st	‘1’ when alarm 2 for Loop-2 is ON; ‘0’ when OFF
10	ALM23.st	‘1’ when alarm 3 for Loop-2 is ON; ‘0’ when OFF
11		
12	ALM24.st	‘1’ when alarm 4 for Loop-2 is ON; ‘0’ when OFF
13	OR2.st	‘1’ when sensor grounding alarm for Loop-2 is ON; ‘0’ when OFF
14, 15		

When the controller mode (UT mode) is other than “cascade control,” ALM21 to ALM24 for Loop-2 are used as alarms 5 to 8 for Loop-1 if the 8-alarm mode is selected using setup parameter AMD.

[See Also] The section on the 8-alarm mode in the User’s Manual of UT750/UT550/ UT520/UT551

● Bit Configuration of D0018: ERROR.2 (PV2 Error)

Bit	Code	Event
0	PV2ADC.st	PV2 A/D converter error
1	PV2BO.st	PV2 burnout error
2	RJC2ERR.st	PV2 RJC error (UT750 only)
3		
4	PV2+over.st	PV2 over-scale
5	PV2-over.st	PV2 under-scale
6, 7		
8	RSP2ADC.st	RSP2 A/D converter error (UT750 only)
9	RSP2BO.st	RSP2 burnout error (UT750 only)
10, 11		
12	C.RSP2ADC.st	RSP2 A/D converter error when RSP1 is used for control (UT750 only)
13	C.RSP2BO.st	Burnout error when RSP2 is used for control (UT750 only)
14	AT2ERR.st	Auto-tuning error
15		

● D0019: PV.2 (Measured input value [PV] for Loop-2)

● D0020: CSP.2 (Current target setpoint [SP] for Loop-2)

● D0021: OUT.2 (Control output value [OUT] for Loop-2)

- During PID computation, you can read the computation result as is from this register. For example, when the computation result is 75.0%, the register contains a value of “750.”
- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains a value half the PID computation result.

● D0022: HOUT.2 (Heating-side control output for Loop-2 in Heating/Cooling Control)

- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains the heating-side control output value.

● D0023: COUT.2 (Cooling-side control output for Loop-2 in Heating/Cooling Control)

- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.output value.
- During heating/cooling computation, this register contains the heating-side control output value.

● Bit Configuration of D0024: MOD.2 (Operation mode of Loop-2)

Bit	Code	Event
0	A/M2.st	0: AUTO; 1: MAN (UT750 only)
1	R/L2.st	0: Local; 1: Remote (UT750 only)
2 to 13		
14	AT2.st	0: Auto-tuning is OFF; 1: Auto-tuning is ON
15		

● D0025: PIDNO.2 (Current PID number for Loop-2)

Bit	Code	Event
0	PIDNO2.0	Bit 0 of the current PID number
1	PIDNO2.1	Bit 1 of the current PID number
2	PIDNO2.2	Bit 2 of the current PID number
3	PIDNO2.3	Bit 3 of the current PID number
4 to 15		

From this register, you can read the PID number currently in use in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = on”, which is represented as “0101” in binary notation and as “5” in decimal notation, indicates that the PID number currently being used is 5.

● D0026: DEV.1 (Deviation for Loop-1)

● D0027: OR.1 (Moving average of sensor grounding alarm for Loop-1)

● D0030: DEV.2 (Deviation for Loop-2)

● D0031: OR.2 (Moving average of sensor grounding alarm for Loop-2)

● D0032: SMEC (Sampling error counter).

● Bit Configuration of D0033: DISTS (Statuses of External Contact Inputs)

Bit	Code	Event
0	DI1.st	Status of external contact input terminal 1 (1: contact is ON; 0: contact is OFF)
1	DI2.st	Status of external contact input terminal 2 (1: contact is ON; 0: contact is OFF)
2	DI3.st	Status of external contact input terminal 3 (1: contact is ON; 0: contact is OFF)
3	DI4.st	Status of external contact input terminal 4 (1: contact is ON; 0: contact is OFF)
4	DI5.st	Status of external contact input terminal 5 (1: contact is ON; 0: contact is OFF)
5	DI6.st	Status of external contact input terminal 6 (1: contact is ON; 0: contact is OFF)
6	DI7.st	Status of external contact input terminal 7 (1: contact is ON; 0: contact is OFF)
7	DI8.st	Status of external contact input terminal 8 (1: contact is ON; 0: contact is OFF) (UT550/UT520/UT551 only)
8	DP1	Status of interruptive operation display 1 (1: displayed; 0: not displayed)
9	DP2	Status of interruptive operation display 2 (1: displayed; 0: not displayed)
10	MG1	Status of interruptive message 1 (1: displayed; 0: not displayed)
11	MG2	Status of interruptive message 2 (1: displayed; 0: not displayed)
12	MG3	Status of interruptive message 3 (1: displayed; 0: not displayed)
13	MG4	Status of interruptive message 4 (1: displayed; 0: not displayed)
14, 15		

Functions assigned to external contact inputs vary depending on the setting of the controller mode (UT mode) and whether or not functions have been assigned to the contact inputs.

[See Also] User's manual of UT750/UT550/UT520/UT551, for the function assignments of external contact inputs.

● Bit Configuration of D0034: RDISTS (Statuses of I/O expansion module's external contact inputs) (UT750 only)

Bit	Code	Event
0	RDI101.st	Input terminal 1 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
1	RDI102.st	Input terminal 2 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
2	RDI103.st	Input terminal 3 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
3	RDI104.st	Input terminal 4 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
4	RDI105.st	Input terminal 5 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
5	RDI106.st	Input terminal 6 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
6	RDI107.st	Input terminal 7 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
7	RDI108.st	Input terminal 8 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
8	RDI201.st	Input terminal 1 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
9	RDI202.st	Input terminal 2 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
10	RDI203.st	Input terminal 3 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
11	RDI204.st	Input terminal 4 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
12	RDI205.st	Input terminal 5 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
13	RDI206.st	Input terminal 6 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
14	RDI207.st	Input terminal 7 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
15	RDI208.st	Input terminal 8 status of expansion module-2 (1: contact is ON; 0: contact is OFF)

Initially, no function is assigned to the external contact inputs via an expansion module. Statuses of these contact inputs can be read only after functions are assigned to them.

[See Also] User's manual of UT750, for function assignment of external contact inputs via an expansion module.

● Bit Configuration of D0035: PARAERR (Error in calibration values and parameters)

Bit	Code	Event
0	CALB.E.st	Calibration value error
1		
2	USER.E.st	Error in the data set using the custom computation building tool (UT750 only)
3		
4	UTMD.st	UT mode error
5	RANGE.st	Input range data error
6	SETUP.st	Setup parameter error
7		
8	PARA.E.st	Operation parameter error
9	MODE.E.st	Error in power-failure backup data
10, 11		
12	EEP.E.st	EEPROM error (UT550/UT520 only)
13		
14	SYSTEM.E.st	System data error
15		

● Bit Configuration of D0036: ALOSTS (Status of alarm output)

Bit	Code	Event
0	ALO11	Status of output assigned with alarm 1 for Loop-1 0: alarm is OFF for “energized” type alarm or ON for “deenergized” type alarm (the relay contact is open) 1: alarm is ON for “energized” type alarm or OFF for “deenergized” type alarm (the relay contact is closed)
1	ALO12	Status of output assigned with alarm 2 for Loop-1 Bit status information is the same as bit 0.
2	ALO13	Status of output assigned with alarm 3 for Loop-1 Bit status information is the same as bit 0.
3		
4	ALO14	Status of output assigned with alarm 4 for Loop-1 Bit status information is the same as bit 0.
5 to 7		
8	ALO21	Status of output assigned with alarm 1 for Loop-2 Bit status information is the same as bit 0.
9	ALO22	Status of output assigned with alarm 2 for Loop-2 Bit status information is the same as bit 0.
10	ALO23	Status of output assigned with alarm 3 for Loop-2 Bit status information is the same as bit 0.
11		
12	ALO24	Status of output assigned with alarm 4 for Loop-2 Bit status information is the same as bit 0.
13 to 15		

- **D0037: TIM1 (Remaining timer count value for Loop-1 timer function)**

  The following are the registers for UT750 only.

- **D0038: TIM2 (Remaining timer count value for Loop-2 timer function)**

- **D0039: DISP1 (Setting value of the parameter for Interruptive Operation Display-1 defined using the Custom Computation Building Tool)**

- **D0040: DISP2 (Setting value of the parameter for Interruptive Operation Display-2 defined using the Custom Computation Building Tool)**

1.4.2 User Area

Register No.	Category	Description
D0050 to D0100	User area	Users can read/write data from/to the registers in this area. However, if a graphic panel is used in the system, users cannot use this area.

1.5 Operation Mode and Computation Parameters

Area for Operation Mode and Computation Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0201	40201	00C8	A/M1	R/W	D0251	40251	00FA	ORH.1	*R/W
D0202	40202	00C9	A/M2	R/W	D0252	40252	00FB	ORL.1	*R/W
D0203	40203	00CA	R/L1	R/W	D0253				
D0204	40204	00CB	R/L2	R/W	D0254				
D0205	40205	00CC	S/R	R/W	D0255				
D0206	40206	00CD	C.A.M	R/W	D0256				
D0207	40207	00CE	SPN	R/W	D0257				
D0208					D0258				
D0209					D0259				
D0210					D0260				
D0211					D0261				
D0212					D0262	40262	0105	PCH.1 (NOTE)	*R/W
D0213					D0263	40263	0106	PCL.1 (NOTE)	*R/W
D0214					D0264				
D0215	40215	00D6	C.RSP.1	R/W	D0265				
D0216	40216	00D7	C.RSP.2	R/W	D0266				
D0217	40217	00D8	MOUT.1	R/W	D0267				
D0218	40218	00D9	MOUTc.1	R/W	D0268				
D0219	40219	00DA	MOUT.2	R/W	D0269				
D0220	40220	00DB	MOUTc.2	R/W	D0270				
D0221					D0271	40271	010E	AT.2	*R/W
D0222					D0272	40272	010F	SC.2	*R/W
D0223					D0273	40273	0110	BS.2	*R/W
D0224					D0274	40274	0111	FL.2	*R/W
D0225	40225	00E0	PNO (NOTE)	R/W	D0275	40275	0112	UPR.2	*R/W
D0226					D0276	40276	0113	DNR.2	*R/W
D0227					D0277	40277	0114	RT.2	*R/W
D0228					D0278	40278	0115	RBS.2	*R/W
D0229					D0279	40279	0116	RFL.2	*R/W
D0230					D0280	40280	0117	ORB.2	*R/W
D0231					D0281	40281	0118	ORH.2	*R/W
D0232					D0282	40282	0119	ORL.2	*R/W
D0233					D0283				
D0234					D0284				
D0235					D0285				
D0236					D0286				
D0237					D0287				
D0238					D0288				
D0239					D0289				
D0240					D0290				
D0241	40241	00F0	AT.1	*R/W	D0291				
D0242	40242	00F1	SC.1	*R/W	D0292	40292	0123	PCH.2 (NOTE)	*R/W
D0243	40243	00F2	BS.1	*R/W	D0293	40293	0124	PCL.2 (NOTE)	*R/W
D0244	40244	00F3	FL.1	*R/W	D0294				
D0245	40245	00F4	UPR.1	*R/W	D0295				
D0246	40246	00F5	DNR.1	*R/W	D0296				
D0247	40247	00F6	RT.1	*R/W	D0297				
D0248	40248	00F7	RBS.1	*R/W	D0298				
D0249	40249	00F8	RFL.1	*R/W	D0299				
D0250	40250	00F9	ORB.1	*R/W	D0300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000. (UT550/UT520/UT551 only)
NOTE : UT551 only

1.5.1 Operation Mode Information

The mode registers listed below are designed to show, by the value contained, which mode is selected.

You can change the mode by writing a different mode to the register via communication.

● D0201: A/M.1 (AUTO/MAN modes for Loop-1)

When D0201 = 0, Loop-1 is in the AUTO (automatic) mode.

When D0201 = 1, Loop-1 is in the MAN (manual) mode.

● D0202: A/M.2 (AUTO/MAN modes for Loop-2) (UT750 only)

When D0202 = 0, Loop-2 is in the AUTO mode.

When D0202 = 1, Loop-2 is in the MAN mode.

● D0203: R/L.1 (REMOTE/LOCAL modes for Loop-1)

When D0203 = 0, Loop-1 is in the LOCAL mode.

When D0203 = 1, Loop-1 is in the REMOTE mode.

● D0204: R/L.2 (REMOTE/LOCAL modes for Loop-2) (UT750 only)

When D0204 = 0, Loop-2 is in the LOCAL mode.

When D0204 = 1, Loop-2 is in the REMOTE mode.

● D0205: S/R (STOP/RUN modes)

When D0205 = 0, the controller is in the STOP mode.

When D0205 = 1, the controller is in the RUN mode.

When the contact input registration parameter S/R of setup parameters is set to “0”, you can write via communication. When it is set to “5162”, you can not write via communication.

● D0206: C.A.M (CAS/AUTO/MAN modes)

When D0206 = 0, the controller is in the AUTO mode.

When D0206 = 1, the controller is in the MAN mode.

When D0206 = 2, the controller is in the CAS (cascade) mode.

1.5.2 Write-only Data Area

The registers listed below are write-only registers that are accessed by a higher-level device.

For example, to set 150.0˚C in the C.RSP.1 register, write 1500 in the register.

Register No.	Code	Description
D0215	C.RSP.1	Used to set SP value for Loop-1.
D0216	C.RSP.2	Used to set SP value for Loop-2. (UT750 only)
D0217	MOUT.1	Used to set control output value or heating-side control output value when Loop-1 is in the MAN mode.
D0218	MOUTc.1	Used to set cooling-side control output value when Loop-1 is in the MAN mode.
D0219	MOUT.2	Used to set control output value or heating-side control output value when Loop-2 is in the MAN mode. (UT750 only)
D0220	MOUTc.2	Used to set cooling-side control output value when Loop-2 is in the MAN mode. (UT750 only)

■ Writing an SP Value

An SP value can be written via communication only when the loop is in the REMOTE mode.

(1) Set the remote input selection parameter RMS to “COM.”

(2) Write the SP value to the C.RSP1 or C.RSP2 register.

(3) Set the loop to the REMOTE mode.

In this way, you can operate the controller to set SP values via communication.

■ Writing a Control Output Value in MAN Mode

You can write a control output value via communication only when the loop is in MAN mode.

(1) Set the loop to the MAN mode.

(2) Write the control output value to MOUT.1, MOUT.2, MOUTc.1 or MOUTc.2 register.

In this way, you can operate the controller in MAN mode to set control output values via communication.

■ Manipulating Valves (Position proportional type only)

In the MAN mode with position-proportional PID computation, write a valve position to the MOUT.1 register.

■ PID Number Selection

Can be used when zone PID selection parameter ZON is set to “3.”

D0225 = 1 to 8

(Depends on the setting of the setup parameter GRP.)

It cannot be set via communication when the PID number is selected by external contact input.

1.5.3 Data Area for Computation Parameters

Register No.	Category	Description	Remarks
D0241 to D0252	Loop-1 computation parameters	AT.1: Loop-1 auto-tuning selection SC.1: Loop-1 SUPER function selection BS.1: Loop-1 PV bias FL.1: Loop-1 PV filter UPR.1: Loop-1 setpoint ramp-up rate DNR.1: Loop-1 setpoint ramp-down rate RT.1: Loop-1 ratio setting RBS.1: Loop-1 remote bias RFL.1: Loop-1 remote input filter ORB.1: Loop-1 ON/OFF rate detection band ORH.1: Loop-1 ON/OFF rate high-limit ORL.1: Loop-1 ON/OFF rate low-limit	For details on the parameters, see the User s Manual of UT750/UT550/UT520 /UT551.
D0262, D0263	PV color change parameters (UT551 only)	PCH.1: High limit for PV color change PCL.1: Low limit for PV color change	
D0271 to D0282	Loop-2 computation parameters	The Loop-2 computation parameters, i.e., AT.2 through ORL.2, are functionally the same as their corresponding Loop-1 computation parameters.	
D0292, D0293	PV color change parameters (cascade secondary-loop) (UT551 only)	PCH.2: High limit for PV color change PCL.2: Low limit for PV color change	

1.6 Loop-1 PID Parameters

Area for Loop-1 PID Parameters (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0301	40301	012C	1.SP	R/W	D0351	40351	015E	3.SP	R/W
D0302	40302	012D	1.A1	*R/W	D0352	40352	015F	3.A1	*R/W
D0303	40303	012E	1.A2	*R/W	D0353	40353	0160	3.A2	*R/W
D0304	40304	012F	1.A3	*R/W	D0354	40354	0161	3.A3	*R/W
D0305	40305	0130	1.A4	*R/W	D0355	40355	0162	3.A4	*R/W
D0306	40306	0131	1.P	*R/W	D0356	40356	0163	3.P	*R/W
D0307	40307	0132	1.I	*R/W	D0357	40357	0164	3.I	*R/W
D0308	40308	0133	1.D	*R/W	D0358	40358	0165	3.D	*R/W
D0309	40309	0134	1.OH	*R/W	D0359	40359	0166	3.OH	*R/W
D0310	40310	0135	1.OL	*R/W	D0360	40360	0167	3.OL	*R/W
D0311	40311	0136	1.MR	*R/W	D0361	40361	0168	3.MR	*R/W
D0312	40312	0137	1.H	*R/W	D0362	40362	0169	3.H	*R/W
D0313	40313	0138	1.DR	*R/W	D0363	40363	016A	3.DR	*R/W
D0314	40314	0139	1.Pc	*R/W	D0364	40364	016B	3.Pc	*R/W
D0315	40315	013A	1.Ic	*R/W	D0365	40365	016C	3.Ic	*R/W
D0316	40316	013B	1.Dc	*R/W	D0366	40366	016D	3.Dc	*R/W
D0317	40317	013C	1.Hc	*R/W	D0367	40367	016E	3.Hc	*R/W
D0318	40318	013D	1.DB	*R/W	D0368	40368	016F	3.DB	*R/W
D0319	40319	013E	1.RP	*R/W	D0369	40369	0170	3.RP	*R/W
D0320	40320	013F	1.PO	*R/W	D0370	40370	0171	3.PO	*R/W
D0321	40321	0140	1.Oc	*R/W	D0371	40371	0172	3.Oc	*R/W
D0322					D0372				
D0323					D0373				
D0324					D0374				
D0325					D0375				
D0326	40326	0145	2.SP	R/W	D0376	40376	0177	4.SP	R/W
D0327	40327	0146	2.A1	*R/W	D0377	40377	0178	4.A1	*R/W
D0328	40328	0147	2.A2	*R/W	D0378	40378	0179	4.A2	*R/W
D0329	40329	0148	2.A3	*R/W	D0379	40379	017A	4.A3	*R/W
D0330	40330	0149	2.A4	*R/W	D0380	40380	017B	4.A4	*R/W
D0331	40331	014A	2.P	*R/W	D0381	40381	017C	4.P	*R/W
D0332	40332	014B	2.I	*R/W	D0382	40382	017D	4.I	*R/W
D0333	40333	014C	2.D	*R/W	D0383	40383	017E	4.D	*R/W
D0334	40334	014D	2.OH	*R/W	D0384	40384	017F	4.OH	*R/W
D0335	40335	014E	2.OL	*R/W	D0385	40385	0180	4.OL	*R/W
D0336	40336	014F	2.MR	*R/W	D0386	40386	0181	4.MR	*R/W
D0337	40337	0150	2.H	*R/W	D0387	40387	0182	4.H	*R/W
D0338	40338	0151	2.DR	*R/W	D0388	40388	0183	4.DR	*R/W
D0339	40339	0152	2.Pc	*R/W	D0389	40389	0184	4.Pc	*R/W
D0340	40340	0153	2.Ic	*R/W	D0390	40390	0185	4.Ic	*R/W
D0341	40341	0154	2.Dc	*R/W	D0391	40391	0186	4.Dc	*R/W
D0342	40342	0155	2.Hc	*R/W	D0392	40392	0187	4.Hc	*R/W
D0343	40343	0156	2.DB	*R/W	D0393	40393	0188	4.DB	*R/W
D0344	40344	0157	2.RP	*R/W	D0394	40394	0189	4.RP	*R/W
D0345	40345	0158	2.PO	*R/W	D0395	40395	018A	4.PO	*R/W
D0346	40346	0159	2.Oc	*R/W	D0396	40396	018B	4.Oc	*R/W
D0347					D0397				
D0348					D0398				
D0349					D0399				
D0350					D0400				

An asterisk (*) indicates that the number of writing actions is limited to 100,000 (UT550/UT520/UT551 only).

Area for Loop-1 PID Parameters (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0401	40401	0190	5.SP	R/W	D0451	40451	01C2	7.SP	R/W
D0402	40402	0191	5.A1	*R/W	D0452	40452	01C3	7.A1	*R/W
D0403	40403	0192	5.A2	*R/W	D0453	40453	01C4	7.A2	*R/W
D0404	40404	0193	5.A3	*R/W	D0454	40454	01C5	7.A3	*R/W
D0405	40405	0194	5.A4	*R/W	D0455	40455	01C6	7.A4	*R/W
D0406	40406	0195	5.P	*R/W	D0456	40456	01C7	7.P	*R/W
D0407	40407	0196	5.I	*R/W	D0457	40457	01C8	7.I	*R/W
D0408	40408	0197	5.D	*R/W	D0458	40458	01C9	7.D	*R/W
D0409	40409	0198	5.OH	*R/W	D0459	40459	01CA	7.OH	*R/W
D0410	40410	0199	5.OL	*R/W	D0460	40460	01CB	7.OL	*R/W
D0411	40411	019A	5.MR	*R/W	D0461	40461	01CC	7.MR	*R/W
D0412	40412	019B	5.H	*R/W	D0462	40462	01CD	7.H	*R/W
D0413	40413	019C	5.DR	*R/W	D0463	40463	01CE	7.DR	*R/W
D0414	40414	019D	5.Pc	*R/W	D0464	40464	01CF	7.Pc	*R/W
D0415	40415	019E	5.Ic	*R/W	D0465	40465	01D0	7.Ic	*R/W
D0416	40416	019F	5.Dc	*R/W	D0466	40466	01D1	7.Dc	*R/W
D0417	40417	01A0	5.Hc	*R/W	D0467	40467	01D2	7.Hc	*R/W
D0418	40418	01A1	5.DB	*R/W	D0468	40468	01D3	7.DB	*R/W
D0419	40419	01A2	5.RP	*R/W	D0469	40469	01D4	RHY	*R/W
D0420	40420	01A3	5.PO	*R/W	D0470	40470	01D5	7.PO	*R/W
D0421	40421	01A4	5.Oc	*R/W	D0471	40471	01D6	7.Oc	*R/W
D0422					D0472				
D0423					D0473				
D0424					D0474				
D0425					D0475				
D0426	40426	01A9	6.SP	R/W	D0476	40476	01DB	8.SP	R/W
D0427	40427	01AA	6.A1	*R/W	D0477	40477	01DC	8.A1	*R/W
D0428	40428	01AB	6.A2	*R/W	D0478	40478	01DD	8.A2	*R/W
D0429	40429	01AC	6.A3	*R/W	D0479	40479	01DE	8.A3	*R/W
D0430	40430	01AD	6.A4	*R/W	D0480	40480	01DF	8.A4	*R/W
D0431	40431	01AE	6.P	*R/W	D0481	40481	01E0	8.P	*R/W
D0432	40432	01AF	6.I	*R/W	D0482	40482	01E1	8.I	*R/W
D0433	40433	01B0	6.D	*R/W	D0483	40483	01E2	8.D	*R/W
D0434	40434	01B1	6.OH	*R/W	D0484	40484	01E3	8.OH	*R/W
D0435	40435	01B2	6.OL	*R/W	D0485	40485	01E4	8.OL	*R/W
D0436	40436	01B3	6.MR	*R/W	D0486	40486	01E5	8.MR	*R/W
D0437	40437	01B4	6.H	*R/W	D0487	40487	01E6	8.H	*R/W
D0438	40438	01B5	6.DR	*R/W	D0488	40488	01E7	8.DR	*R/W
D0439	40439	01B6	6.Pc	*R/W	D0489	40489	01E8	8.Pc	*R/W
D0440	40440	01B7	6.Ic	*R/W	D0490	40490	01E9	8.Ic	*R/W
D0441	40441	01B8	6.Dc	*R/W	D0491	40491	01EA	8.Dc	*R/W
D0442	40442	01B9	6.Hc	*R/W	D0492	40492	01EB	8.Hc	*R/W
D0443	40443	01BA	6.DB	*R/W	D0493	40493	01EC	8.DB	*R/W
D0444	40444	01BB	6.RP	*R/W	D0494	40494	01ED	RDV	*R/W
D0445	40445	01BC	6.PO	*R/W	D0495	40495	01EE	8.PO	*R/W
D0446	40446	01BD	6.Oc	*R/W	D0496	40496	01EF	8.Oc	*R/W
D0447					D0497				
D0448					D0498				
D0449					D0499				
D0450					D0500				

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1.6.1 Data Area for Loop-1 PID Parameters

Register No.	Category	Description	Remarks
D0301 to D0321	Group-1 parameters for Loop-1	1.SP: Target setpoint 1.A1: Alarm 1 setpoint 1.A2: Alarm 2 setpoint 1.A3: Alarm 3 setpoint 1.A4: Alarm 4 setpoint 1.P: Proportional band 1.I: Integral time 1.D: Derivative time 1.OH: Upper limit of output 1.OL: Lower limit of output 1.MR: Manual reset 1.H: Hysteresis 1.DR: Direct/reverse action switchover 1.Pc: Cooling-side proportional band 1.Ic: Cooling-side integral time 1.Dc: Cooling-side derivative time 1.Hc: Cooling-side relay hysteresis 1.DB: Deadband 1.RP: Zone PID reference point 1.PO: Preset output value 1.Oc: Cooling-side preset output value	Selecting an SP number by means of communication enables a parameter group with the same number to be used for both Loop-1 and Loop-2 simultaneously. For example, if you set the SP number selection parameter (SPNO) to 5, the parameters from 5.SP through 5.Oc are used. For details on the parameters, see the User s Manual of UT750/UT550/UT520/UT551.
D0326 to D0346	Group-2 parameters for Loop-1	The parameters from 2.SP to 2.Oc are functionally the same as their corresponding group-1 parameters.	
D0351 to D0371	Group-3 parameters for Loop-1	The parameters from 3.SP to 3.Oc are functionally the same as their corresponding group-1 parameters.	
D0376 to D0396	Group-4 parameters for Loop-1	The parameters from 4.SP to 4.Oc are functionally the same as their corresponding group-1 parameters.	
D0401 to D0421	Group-5 parameters for Loop-1	The parameters from 5.SP to 5.Oc are functionally the same as their corresponding group-1 parameters.	
D0426 to D0446	Group-6 parameters for Loop-1	The parameters from 6.SP to 6.Oc are functionally the same as their corresponding group-1 parameters.	
D0451 to D0471	Group-7 parameters for Loop-1	The parameters from 7.SP to 7.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RHY, which corresponds to 1.RP, denotes the zone PID hysteresis.	
D0476 to D0496	Group-8 parameters for Loop-1	The parameters from 8.SP to 8.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RDV, which corresponds to 1.RP, denotes the zone PID reference deviation.	

1.7 Loop-2 PID Parameters

Area for Loop-2 PID Parameters (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0501	40501	01F4	1.SP	R/W	D0551	40551	0226	3.SP	R/W
D0502	40502	01F5	1.A1	*R/W	D0552	40552	0227	3.A1	*R/W
D0503	40503	01F6	1.A2	*R/W	D0553	40553	0228	3.A2	*R/W
D0504	40504	01F7	1.A3	*R/W	D0554	40554	0229	3.A3	*R/W
D0505	40505	01F8	1.A4	*R/W	D0555	40555	022A	3.A4	*R/W
D0506	40506	01F9	1.P	*R/W	D0556	40556	022B	3.P	*R/W
D0507	40507	01FA	1.I	*R/W	D0557	40557	022C	3.I	*R/W
D0508	40508	01FB	1.D	*R/W	D0558	40558	022D	3.D	*R/W
D0509	40509	01FC	1.OH	*R/W	D0559	40559	022E	3.OH	*R/W
D0510	40510	01FD	1.OL	*R/W	D0560	40560	022F	3.OL	*R/W
D0511	40511	01FE	1.MR	*R/W	D0561	40561	0230	3.MR	*R/W
D0512	40512	01FF	1.H	*R/W	D0562	40562	0231	3.H	*R/W
D0513	40513	0200	1.DR	*R/W	D0563	40563	0232	3.DR	*R/W
D0514	40514	0201	1.Pc	*R/W	D0564	40564	0233	3.Pc	*R/W
D0515	40515	0202	1.Ic	*R/W	D0565	40565	0234	3.Ic	*R/W
D0516	40516	0203	1.Dc	*R/W	D0566	40566	0235	3.Dc	*R/W
D0517	40517	0204	1.Hc	*R/W	D0567	40567	0236	3.Hc	*R/W
D0518	40518	0205	1.DB	*R/W	D0568	40568	0237	3.DB	*R/W
D0519	40519	0206	1.RP	*R/W	D0569	40569	0238	3.RP	*R/W
D0520	40520	0207	1.PO	*R/W	D0570	40570	0239	3.PO	*R/W
D0521	40521	0208	1.Oc	*R/W	D0571	40571	023A	3.Oc	*R/W
D0522					D0572				
D0523					D0573				
D0524					D0574				
D0525					D0575				
D0526	40526	020D	2.SP	R/W	D0576	40576	023F	4.SP	R/W
D0527	40527	020E	2.A1	*R/W	D0577	40577	0240	4.A1	*R/W
D0528	40528	020F	2.A2	*R/W	D0578	40578	0241	4.A2	*R/W
D0529	40529	0210	2.A3	*R/W	D0579	40579	0242	4.A3	*R/W
D0530	40530	0211	2.A4	*R/W	D0580	40580	0243	4.A4	*R/W
D0531	40531	0212	2.P	*R/W	D0581	40581	0244	4.P	*R/W
D0532	40532	0213	2.I	*R/W	D0582	40582	0245	4.I	*R/W
D0533	40533	0214	2.D	*R/W	D0583	40583	0246	4.D	*R/W
D0534	40534	0215	2.OH	*R/W	D0584	40584	0247	4.OH	*R/W
D0535	40535	0216	2.OL	*R/W	D0585	40585	0248	4.OL	*R/W
D0536	40536	0217	2.MR	*R/W	D0586	40586	0249	4.MR	*R/W
D0537	40537	0218	2.H	*R/W	D0587	40587	024A	4.H	*R/W
D0538	40538	0219	2.DR	*R/W	D0588	40588	024B	4.DR	*R/W
D0539	40539	021A	2.Pc	*R/W	D0589	40589	024C	4.Pc	*R/W
D0540	40540	021B	2.Ic	*R/W	D0590	40590	024D	4.Ic	*R/W
D0541	40541	021C	2.Dc	*R/W	D0591	40591	024E	4.Dc	*R/W
D0542	40542	021D	2.Hc	*R/W	D0592	40592	024F	4.Hc	*R/W
D0543	40543	021E	2.DB	*R/W	D0593	40593	0250	4.DB	*R/W
D0544	40544	021F	2.RP	*R/W	D0594	40594	0251	4.RP	*R/W
D0545	40545	0220	2.PO	*R/W	D0595	40595	0252	4.PO	*R/W
D0546	40546	0221	2.Oc	*R/W	D0596	40596	0253	4.Oc	*R/W
D0547					D0597				
D0548					D0598				
D0549					D0599				
D0550					D0600				

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Area for Loop-2 PID Parameters (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0601	40601	0258	5.SP	R/W	D0651	40651	028A	7.SP	R/W
D0602	40602	0259	5.A1	*R/W	D0652	40652	028B	7.A1	*R/W
D0603	40603	025A	5.A2	*R/W	D0653	40653	028C	7.A2	*R/W
D0604	40604	025B	5.A3	*R/W	D0654	40654	028D	7.A3	*R/W
D0605	40605	025C	5.A4	*R/W	D0655	40655	028E	7.A4	*R/W
D0606	40606	025D	5.P	*R/W	D0656	40656	028F	7.P	*R/W
D0607	40607	025E	5.I	*R/W	D0657	40657	0290	7.I	*R/W
D0608	40608	025F	5.D	*R/W	D0658	40658	0291	7.D	*R/W
D0609	40609	0260	5.OH	*R/W	D0659	40659	0292	7.OH	*R/W
D0610	40610	0261	5.OL	*R/W	D0660	40660	0293	7.OL	*R/W
D0611	40611	0262	5.MR	*R/W	D0661	40661	0294	7.MR	*R/W
D0612	40612	0263	5.H	*R/W	D0662	40662	0295	7.H	*R/W
D0613	40613	0264	5.DR	*R/W	D0663	40663	0296	7.DR	*R/W
D0614	40614	0265	5.Pc	*R/W	D0664	40664	0297	7.Pc	*R/W
D0615	40615	0266	5.Ic	*R/W	D0665	40665	0298	7.Ic	*R/W
D0616	40616	0267	5.Dc	*R/W	D0666	40666	0299	7.Dc	*R/W
D0617	40617	0268	5.Hc	*R/W	D0667	40667	029A	7.Hc	*R/W
D0618	40618	0269	5.DB	*R/W	D0668	40668	029B	7.DB	*R/W
D0619	40639	026A	5.RP	*R/W	D0669	40669	029C	RHY	*R/W
D0620	40620	026B	5.PO	*R/W	D0670	40670	029D	7.PO	*R/W
D0621	40621	026C	5.Oc	*R/W	D0671	40671	029E	7.Oc	*R/W
D0622					D0672				
D0623					D0673				
D0624					D0674				
D0625					D0675				
D0626	40626	0271	6.SP	R/W	D0676	40676	02A3	8.SP	R/W
D0627	40627	0272	6.A1	*R/W	D0677	40677	02A4	8.A1	*R/W
D0628	40628	0273	6.A2	*R/W	D0678	40678	02A5	8.A2	*R/W
D0629	40629	0274	6.A3	*R/W	D0679	40679	02A6	8.A3	*R/W
D0630	40630	0275	6.A4	*R/W	D0680	40680	02A7	8.A4	*R/W
D0631	40631	0276	6.P	*R/W	D0681	40681	02A8	8.P	*R/W
D0632	40632	0277	6.I	*R/W	D0682	40682	02A9	8.I	*R/W
D0633	40633	0278	6.D	*R/W	D0683	40683	02AA	8.D	*R/W
D0634	40634	0279	6.OH	*R/W	D0684	40684	02AB	8.OH	*R/W
D0635	40635	027A	6.OL	*R/W	D0685	40685	02AC	8.OL	*R/W
D0636	40636	027B	6.MR	*R/W	D0686	40686	02AD	8.MR	*R/W
D0637	40637	027C	6.H	*R/W	D0687	40687	02AE	8.H	*R/W
D0638	40638	027D	6.DR	*R/W	D0688	40688	02AF	8.DR	*R/W
D0639	40639	027E	6.Pc	*R/W	D0689	40689	02B0	8.Pc	*R/W
D0640	40640	027F	6.Ic	*R/W	D0690	40690	02B1	8.Ic	*R/W
D0641	40641	0280	6.Dc	*R/W	D0691	40691	02B2	8.Dc	*R/W
D0642	40642	0281	6.Hc	*R/W	D0692	40692	02B3	8.Hc	*R/W
D0643	40643	0282	6.DB	*R/W	D0693	40693	02B4	8.DB	*R/W
D0644	40644	0283	6.RP	*R/W	D0694	40694	02B5	RDV	*R/W
D0645	40645	0284	6.PO	*R/W	D0695	40695	02B6	8.PO	*R/W
D0646	40646	0285	6.Oc	*R/W	D0696	40696	02B7	8.Oc	*R/W
D0647					D0697				
D0648					D0698				
D0649					D0699				
D0650					D0700				

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1.7.1 Data Area for Loop-2 PID Parameters

Register No.	Category	Description	Remarks
D0501 to D0521	Group-1 parameters for Loop-2	1.SP: Target setpoint 1.A1: Alarm 1 setpoint 1.A2: Alarm 2 setpoint 1.A3: Alarm 3 setpoint 1.A4: Alarm 4 setpoint 1.P: Proportional band 1.I: Integral time 1.D: Derivative time 1.OH: Upper limit of output 1.OL: Lower limit of output 1.MR: Manual reset 1.H: Hysteresis 1.DR: Direct/reverse action switchover 1.Pc: Cooling-side proportional band 1.Ic: Cooling-side integral time 1.Dc: Cooling-side derivative time 1.Hc: Cooling-side relay hysteresis 1.DB: Deadband 1.RP: Zone PID reference point 1.PO: Preset output value 1.Oc: Cooling-side preset output value	Selecting an SP number by means of communication enables a parameter group with the same number to be used for both Loop-1 and Loop-2 simultaneously. For example, if you set the SP number selection parameter (SPNO) to 5, the parameters from 5.SP through 5.Oc are used. For details on the parameters, see the User s Manual of UT750/UT550/UT520/UT551.
D0526 to D0546	Group-2 parameters for Loop-2	The parameters from 2.SP to 2.Oc are functionally the same as their corresponding group-1 parameters.	
D0551 to D0571	Group-3 parameters for Loop-2	The parameters from 3.SP to 3.Oc are functionally the same as their corresponding group-1 parameters.	
D0576 to D0596	Group-4 parameters for Loop-2	The parameters from 4.SP to 4.Oc are functionally the same as their corresponding group-1 parameters.	
D0601 to D0621	Group-5 parameters for Loop-2	The parameters from 5.SP to 5.Oc are functionally the same as their corresponding group-1 parameters.	
D0626 to D0646	Group-6 parameters for Loop-2	The parameters from 6.SP to 6.Oc are functionally the same as their corresponding group-1 parameters.	
D0651 to D0671	Group-7 parameters for Loop-2	The parameters from 7.SP to 7.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RHY, which corresponds to 1.RP, denotes the zone PID hysteresis.	
D0676 to D0696	Group-8 parameters for Loop-2	The parameters from 8.SP to 8.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RDV, which corresponds to 1.RP, denotes the zone PID reference deviation.	

1.8 USER Parameters, Ten-segment Linearizer Parameters, and Messages

Area for USER Parameters and Ten-segment Linearizer Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0701	40701	02BC	U1	*R/W	D0751	40751	02EE	2.A1	*R/W
D0702	40702	02BD	U2	*R/W	D0752	40752	02EF	2.B1	*R/W
D0703	40703	02BE	U3	*R/W	D0753	40753	02F0	2.A2	*R/W
D0704	40704	02BF	U4	*R/W	D0754	40754	02F1	2.B2	*R/W
D0705	40705	02C0	U5	*R/W	D0755	40755	02F2	2.A3	*R/W
D0706	40706	02C1	U6	*R/W	D0756	40756	02F3	2.B3	*R/W
D0707	40707	02C2	U7	*R/W	D0757	40757	02F4	2.A4	*R/W
D0708	40708	02C3	U8	*R/W	D0758	40758	02F5	2.B4	*R/W
D0709	40709	02C4			D0759	40759	02F6	2.A5	*R/W
D0710	40710	02C5			D0760	40760	02F7	2.B5	*R/W
D0711	40711	02C6			D0761	40761	02F8	2.A6	*R/W
D0712	40712	02C7			D0762	40762	02F9	2.B6	*R/W
D0713	40713	02C8			D0763	40763	02FA	2.A7	*R/W
D0714	40714	02C9			D0764	40764	02FB	2.B7	*R/W
D0715	40715	02CA			D0765	40765	02FC	2.A8	*R/W
D0716	40716	02CB			D0766	40766	02FD	2.B8	*R/W
D0717	40717	02CC			D0767	40767	02FE	2.A9	*R/W
D0718	40718	02CD			D0768	40768	02FF	2.B9	*R/W
D0719	40719	02CE			D0769	40769	0300	2.A10	*R/W
D0720	40720	02CF			D0770	40770	0301	2.B10	*R/W
D0721	40721	02D0			D0771	40771	0302	2.A11	*R/W
D0722	40722	02D1			D0772	40772	0303	2.B11	*R/W
D0723	40723	02D2			D0773	40773	0304	2.PMD	*R/W
D0724	40724	02D3			D0774				
D0725	40725	02D4			D0775				
D0726	40726	02D5	1.A1	*R/W	D0776				
D0727	40727	02D6	1.B1	*R/W	D0777				
D0728	40728	02D7	1.A2	*R/W	D0778				
D0729	40729	02D8	1.B2	*R/W	D0779				
D0730	40730	02D9	1.A3	*R/W	D0780				
D0731	40731	02DA	1.B3	*R/W	D0781				
D0732	40732	02DB	1.A4	*R/W	D0782				
D0733	40733	02DC	1.B4	*R/W	D0783				
D0734	40734	02DD	1.A5	*R/W	D0784				
D0735	40735	02DE	1.B5	*R/W	D0785				
D0736	40736	02DF	1.A6	*R/W	D0786				
D0737	40737	02E0	1.B6	*R/W	D0787				
D0738	40738	02E1	1.A7	*R/W	D0788				
D0739	40739	02E2	1.B7	*R/W	D0789				
D0740	40740	02E3	1.A8	*R/W	D0790				
D0741	40741	02E4	1.B8	*R/W	D0791				
D0742	40742	02E5	1.A9	*R/W	D0792				
D0743	40743	02E6	1.B9	*R/W	D0793				
D0744	40744	02E7	1.A10	*R/W	D0794				
D0745	40745	02E8	1.B10	*R/W	D0795				
D0746	40746	02E9	1.A11	*R/W	D0796				
D0747	40747	02EA	1.B11	*R/W	D0797				
D0748	40748	02EB	1.PMD	*R/W	D0798				
D0749					D0799				
D0750					D0800				

An asterisk (*) indicates that the number of writing actions is limited to 100,000 (UT550/UT520/UT551 only).

Area for Messages									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0801	40801	0320	MG10	R	D0851				
D0802	40802	0321	MG11	R	D0852				
D0803	40803	0322	MG12	R	D0853				
D0804	40804	0323	MG13	R	D0854				
D0805	40805	0324	MG14	R	D0855				
D0806	40806	0325	MG15	R	D0856				
D0807	40807	0326	MG16	R	D0857				
D0808	40808	0327	MG17	R	D0858				
D0809	40809	0328	MG18	R	D0859				
D0810	40810	0329	MG19	R	D0860				
D0811	40811	032A	MG20	R	D0861				
D0812	40812	032B	MG21	R	D0862				
D0813	40813	032C	MG22	R	D0863				
D0814	40814	032D	MG23	R	D0864				
D0815	40815	032E	MG24	R	D0865				
D0816	40816	032F	MG25	R	D0866				
D0817	40817	0330	MG26	R	D0867				
D0818	40818	0331	MG27	R	D0868				
D0819	40819	0332	MG28	R	D0869				
D0820	40820	0333	MG29	R	D0870				
D0821	40821	0334	MG30	R	D0871				
D0822	40822	0335	MG31	R	D0872				
D0823	40823	0336	MG32	R	D0873				
D0824	40824	0337	MG33	R	D0874				
D0825	40825	0338	MG34	R	D0875				
D0826	40826	0339	MG35	R	D0876				
D0827	40827	033A	MG36	R	D0877				
D0828	40828	033B	MG37	R	D0878				
D0829	40829	033C	MG38	R	D0879				
D0830	40830	033D	MG39	R	D0880				
D0831	40831	033E	MG40	R	D0881				
D0832	40832	033F	MG41	R	D0882				
D0833	40833	0340	MG42	R	D0883				
D0834	40834	0341	MG43	R	D0884				
D0835	40835	0342	MG44	R	D0885				
D0836	40836	0343	MG45	R	D0886				
D0837	40837	0344	MG46	R	D0887				
D0838	40838	0345	MG47	R	D0888				
D0839	40839	0346	MG48	R	D0889				
D0840	40840	0347	MG49	R	D0890				
D0841	40841	0348	NAME1	R	D0891				
D0842	40842	0349	NAME2	R	D0892				
D0843	40843	034A	NAME3	R	D0893				
D0844	40844	034B	NAME4	R	D0894				
D0845	40845	034C	NAME5	R	D0895				
D0846	40846	034D	NAME6	R	D0896				
D0847	40847	034E	NAME7	R	D0897				
D0848	40848	034F	NAME8	R	D0898				
D0849	40849	0350	NAME9	R	D0899				
D0850	40850	0351	NAME10	R	D0900				

1.8.1 Data Area for USER Parameters

Register No.	Category	Description	Remarks
D0701 to D0708	User parameter	U1 to U8	Parameters U1 to U3 are used when the controller mode (UT mode) is set for loop control with PV switching, loop control with PV auto-selector, loop control with PV switching and two universal inputs, or loop control with PV auto-selector and two universal inputs. Parameters U4 to U8 are used when the controller is set up for custom computation control and are available only with UT750. **[See Also]** User s Manual of UT750/UT550/UT520/UT551.

1.8.2 Data Area for Parameters of Ten-segment Linearizers 1 and 2

Register No.	Category	Description	Remarks
D0726 to D0748	Ten-segment linearizer-1 parameters	1.A1: Ten-segment linearizer-1 input 1 1.B1: Ten-segment linearizer-1 output 1 1.A2: Ten-segment linearizer-1 input 2 1.B2: Ten-segment linearizer-1 output 2 1.A3: Ten-segment linearizer-1 input 3 1.B3: Ten-segment linearizer-1 output 3 1.A4: Ten-segment linearizer-1 input 4 1.B4: Ten-segment linearizer-1 output 4 1.A5: Ten-segment linearizer-1 input 5 1.B5: Ten-segment linearizer-1 output 5 1.A6: Ten-segment linearizer-1 input 6 1.B6: Ten-segment linearizer-1 output 6 1.A7: Ten-segment linearizer-1 input 7 1.B7: Ten-segment linearizer-1 output 7 1.A8: Ten-segment linearizer-1 input 8 1.B8: Ten-segment linearizer-1 output 8 1.A9: Ten-segment linearizer-1 input 9 1.B9: Ten-segment linearizer-1 output 9 1.A10: Ten-segment linearizer-1 input 10 1.B10: Ten-segment linearizer-1 output 10 1.A11: Ten-segment linearizer-1 input 11 1.B11: Ten-segment linearizer 1 output 11 1.PMD: Ten-segment linearizer 1 mode	For details on the parameters, see the User's Manual of UT750/UT550/UT520/UT551. 1. A1≤1.A2≤...≤1.A11 1. B1≤1.B2≤...≤1.B11 Unit and setting range EU data: -66.7 through 105.0% of PV input range; EUS data: -66.7 through 105.0% of PV input range span; % data: -5.0 through 105.0%
D0751 to D0773	Ten-segment linearizer-2 parameters	The parameters from 2.A1 to 2.PMD are functionally the same as their corresponding parameters for ten-segment linearizer-1.	

1.8.3 Area for Message

Register No.	Category	Description	Remarks
D0801 to D0820	Message 1 text setting	MG10 to MG29	These registers store the messages registered using the LL100 PC-based Parameters Setting Tool. Each message text should include no more than 33 alphanumeric characters. You can register a maximum of four messages.
D0821 to D0840	Message 2 text setting	MG30 to MG49	
D0841 to D0850	Message 3 text setting	NAME1 to NAME10	

Message (MG) To display a message on the LCD display of UT750, do the following.

(1) Assign the interruptive message display function to a contact input.

(2) Register a message using LL100 PC-based Parameters Setting Tool.

(3) Turn ON the contact input.

However, assigning the setup parameters MG1 to MG4 to the external contact inputs is required.

Name (NAME) The characters entered in the name area will not be shown on UT750/ UT550/UT520/UT551's display. This name is used as a tag name, instrument name, or other.

1.9 Control Action, Loop-common Function, and I/O Configuration Parameters

Area for Control Action Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0901	40901	0384	RMS.1	*R/W	D0951				
D0902	40902	0385	SPT.1	*R/W	D0952				
D0903	40903	0386	PVT.1	*R/W	D0953				
D0904	40904	0387	TMU.1	*R/W	D0954				
D0905					D0955	40955	03BA	AL1.2	*R/W
D0906					D0956	40956	03BB	AL2.2	*R/W
D0907					D0957	40957	03BC	AL3.2	*R/W
D0908					D0958	40958	03BD	AL4.2	*R/W
D0909					D0959	40959	03BE	HY1.2	*R/W
D0910					D0960	40960	03BF	HY2.2	*R/W
D0911					D0961	40961	03C0	HY3.2	*R/W
D0912					D0962	40962	03C1	HY4.2	*R/W
D0913					D0963	40963	03C2	AMD.2	*R/W
D0914					D0964				
D0915	40915	0392	AL1.1	*R/W	D0965				
D0916	40916	0393	AL2.1	*R/W	D0966	40966	03C5	OPR.2	*R/W
D0917	40917	0394	AL3.1	*R/W	D0967	40967	03C6	MOD.2	*R/W
D0918	40918	0395	AL4.1	*R/W	D0968	40968	03C7	AR.2	*R/W
D0919	40919	0396	HY1.1	*R/W	D0969				
D0920	40920	0397	HY2.1	*R/W	D0970				
D0921	40921	0398	HY3.1	*R/W	D0971				
D0922	40922	0399	HY4.1	*R/W	D0972				
D0923	40923	039A	AMD.1	*R/W	D0973	40973	03CC	SPH.2	*R/W
D0924					D0974	40974	03CD	SPL.2	*R/W
D0925					D0975	40975	03CE	DY1.2	*R/W
D0926	40926	039D	OPR.1	*R/W	D0976	40976	03CF	DY2.2	*R/W
D0927	40927	039E	MOD.1	*R/W	D0977	40977	03D0	DY3.2	*R/W
D0928	40928	039F	AR.1	*R/W	D0978	40978	03D1	DY4.2	*R/W
D0929	40929	03A0	ZON	*R/W	D0979				
D0930	40930	03A1	R.MD	*R/W	D0980				
D0931	40931	03A2	R.TM	*R/W	D0981				
D0932					D0982				
D0933	40933	03A4	SPH.1	*R/W	D0983				
D0934	40934	03A5	SPL.1	*R/W	D0984				
D0935	40935	03A6	DY1.1	*R/W	D0985				
D0936	40936	03A7	DY2.1	*R/W	D0986				
D0937	40937	03A8	DY3.1	*R/W	D0987				
D0938	40938	03A9	DY4.1	*R/W	D0988				
D0939					D0989				
D0940	40940	03AD	GRP	*R/W	D0990				
D0941	40941	03AC	RMS.2	*R/W	D0991				
D0942	40942	03AD	SPT.2	*R/W	D0992				
D0943	40943	03AE	PVT.2	*R/W	D0993				
D0944	40944	03AF	TMU.2	*R/W	D0994				
D0945					D0995				
D0946					D0996				
D0947					D0997				
D0948					D0998				
D0949					D0999				
D0950					D1000				

An asterisk (*) indicates that the number of writing actions is limited to 100,000 (UT550/UT520/UT551 only).

Area for Loop-common Function Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1001	41001	03E8	A.BS1	*R/W	D1051				
D1002	41002	03E9	A.FL1	*R/W	D1052				
D1003	41003	03EA	A.SR1	*R/W	D1053				
D1004	41004	03EB	A.LC1	*R/W	D1054				
D1005	41005	03EC	A.BS2	*R/W	D1055				
D1006	41006	03ED	A.FL2	*R/W	D1056				
D1007	41007	03EE	A.SR2	*R/W	D1057				
D1008	41008	03EF	A.LC2	*R/W	D1058				
D1009	41009	03F0	A.BS3	*R/W	D1059				
D1010	41010	03F1	A.FL3	*R/W	D1060				
D1011	41011	03F2	A.SR3	*R/W	D1061				
D1012	41012	03F3	A.LC3	*R/W	D1062				
D1013	41013	03F4	RET1	*R/W	D1063				
D1014	41014	03F5	RTH1	*R/W	D1064				
D1015	41015	03F6	RTL1	*R/W	D1065				
D1016	41016	03F7	RET2	*R/W	D1066				
D1017	41017	03F8	RTH2	*R/W	D1067				
D1018	41018	03F9	RTL2	*R/W	D1068				
D1019	41019	03FA	DVB1	*R/W	D1069				
D1020	41020	03FB	DVB2	*R/W	D1070				
D1021	41021	03FC	TSC1	*R/W	D1071				
D1022	41022	03FD	TSC2	*R/W	D1072				
D1023	41023	03FE	TTM	*R/W	D1073				
D1024	41024	03FF	▲▼	*R/W	D1074				
D1025	41025	0400	A/M	*R/W	D1075				
D1026					D1076				
D1027					D1077				
D1028	41028	0403	MODE	*R/W	D1078				
D1029					D1079				
D1030	41030	0405	LP1	*R/W	D1080				
D1031	41031	0406	LP2	*R/W	D1081				
D1032	41032	0407	PID	*R/W	D1082				
D1033	41033	0408	USR	*R/W	D1083				
D1034	41034	0409	PYS1	*R/W	D1084				
D1035	41035	040A	PYS2	*R/W	D1085				
D1036					D1086				
D1037	41037	040C	PCM.1 (NOTE)	*R/W	D1087				
D1038	41038	040D	ERJ (NOTE)	*R/W	D1088				
D1039	41039	040E	PCM.2 (NOTE)	*R/W	D1089				
D1040					D1090				
D1041					D1091				
D1042					D1092				
D1043					D1093				
D1044					D1094				
D1045					D1095				
D1046					D1096				
D1047					D1097				
D1048					D1098				
D1049					D1099				
D1050					D1100				

An asterisk (*) indicates that the number of writing actions is limited to 100,000 (UT550/UT520/UT551 only).
NOTE : UT551 only.

Area for I/O Configuration Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1101	41101	044C	C.S1	*R/W	D1151				
D1102	41102	044D	C.S2	*R/W	D1152				
D1103	41103	044E	C.S3	*R/W	D1153				
D1104	41104	044F	C.S4	*R/W	D1154				
D1105	41105	0450	C.S5	*R/W	D1155				
D1106	41106	0451	DO1	*R/W	D1156				
D1107	41107	0452	DO2	*R/W	D1157				
D1108	41108	0453	DO3	*R/W	D1158				
D1109	41109	0454	DO4	*R/W	D1159				
D1110	41110	0455	DO5	*R/W	D1160				
D1111	41111	0456	DO6	*R/W	D1161				
D1112	41112	0457	DO7	*R/W	D1162				
D1113	41113	0458	R151	*R/W	D1163				
D1114	41114	0459	R152	*R/W	D1164				
D1115	41115	045A	R153	*R/W	D1165				
D1116	41116	045B	R154	*R/W	D1166				
D1117	41117	045C	R155	*R/W	D1167				
D1118	41118	045D	R156	*R/W	D1168				
D1119	41119	045E	R157	*R/W	D1169				
D1120	41120	045F	R158	*R/W	D1170	41170	0491	PYA1	*R/W
D1121	41121	0460	R251	*R/W	D1171	41171	0492	PYB1	*R/W
D1122	41122	0461	R252	*R/W	D1172	41172	0493	PYA2	*R/W
D1123	41123	0462	R253	*R/W	D1173	41173	0494	PYB2	*R/W
D1124	41124	0463	R254	*R/W	D1174	41174	0495	PIDNO.b0 (NOTE)	*R/W
D1125	41125	0464	R255	*R/W	D1175	41175	0496	PIDNO.b1 (NOTE)	*R/W
D1126	41126	0465	R256	*R/W	D1176	41176	0497	PIDNO.b2 (NOTE)	*R/W
D1127	41127	0466	R257	*R/W	D1177	41177	0498	PIDNO.b3 (NOTE)	*R/W
D1128	41128	0467	R258	*R/W	D1178	41178	0499	REM (NOTE)	*R/W
D1129	41129	0468	A/M.1	*R/W	D1179				
D1130	41130	0469	A/M.2	*R/W	D1180	41180	049B	LCL(NOTE)	*R/W
D1131	41131	046A	R/L.1	*R/W	D1181				
D1132	41132	046B	R/L.2	*R/W	D1182				
D1133	41133	046C	S/R	*R/W	D1183				
D1134	41134	046D	CAS	*R/W	D1184				
D1135	41135	046E	AUTO	*R/W	D1185				
D1136	41136	046F	MAN	*R/W	D1186				
D1137	41137	0470	SP.b0	*R/W	D1187				
D1138	41138	0471	SP.b1	*R/W	D1188				
D1139	41139	0472	SP.b2	*R/W	D1189				
D1140	41140	0473	SP.b3	*R/W	D1190				
D1141	41141	0474	DP1	*R/W	D1191				
D1142	41142	0475	DP2	*R/W	D1192				
D1143	41143	0476	MG1	*R/W	D1193				
D1144	41144	0477	MG2	*R/W	D1194				
D1145	41145	0478	MG3	*R/W	D1195				
D1146	41146	0479	MG4	*R/W	D1196				
D1147					D1197				
D1148					D1198				
D1149					D1199				
D1150					D1200				

An asterisk (*) indicates that the number of writing actions is limited to 100,000 (UT550/UT520/UT551 only).
NOTE : UT551 only.

1.9.1 Data Area for Control Action Parameters

Register No.	Category	Description	Remarks
D0901 to D0904 D0933, D0934	SP-related parameters for Loop-1	RMS.1 to TMU.1 SPH.1, SPL.1	For details on the parameters, see the User's Manual of UT750/UT550/UT520/UT551.
D0915 to D0923 D0935, D0938	Alarm setting parameters for Loop-1	AL1.1 to AMD.1 DY1.1 to DY4.1	
D0926 to D0931 D0940	Control function setting parameters for Loop-1	OPR.1 to R.TM GRP (common to Loop-1 and -2)	
D0941 to D0944 D0973, D0974	SP-related parameters for Loop-2	RMS.2 to TMU.2 RMS.2 (UT750 only) SPH.2, SPL.2	
D0955 to D0963 D0975, D0978	Alarm setting parameters for Loop-2	AL1.2 to AMD.2 DY1.2 to DY4.2	
D0966 to D0968 D0940	Control function setting parameters for Loop-2	OPR.2 to AR.2 GRP (common to Loop-1 and -2)	

1.9.2 Data Area for Loop-common Function Parameters

Register No.	Category	Description	Remarks
D1001 to D1004	Input computation setting parameters	A.BS1 to A.LC1	For details on the parameters, see the User s Manual of UT750/UT550/UT520/UT551.
D1005 to D1008		A.BS2 to A.LC2 (UT750 only)	
D1009 to D1012		A.BS3 to A.LC3	
D1013 to D1018	Retransmission output setting parameters	RET1 to RTL2	
D1019 to D1023	Deviation trend setting parameters	DVB1 to TTM TSC1 to TTM (UT750 only)	
D1024, D1025	Key-lock setting parameters	▲▼, A/M	
D1028 to D1035	Menu-lock setting parameters	MODE to PYS2	
D1037, D1039	PV color mode parameters (UT551 only)	PCM.1, PCM.2	
D1038	External RJC setpoint (UT551 only)	ERJ	

1.9.3 Data Area for I/O Configuration Parameters

Register No.	Category	Description	Remarks
D1101 to D1105	SELECT display registration parameters	C.S1 to C.S5	For details on the parameters, see the User s Manual of UT750/UT550/UT520/UT551.
D1106 to D1112	Contact output flag configuration parameters	DO1 to DO7	
D1113 to D1128	R*** output flag configuration parameters	R151 to R258 (UT750 only)	
D1129 to D1146	Contact input configuration parameters	A/M to MG4, A/M2, R/L2, and DP1 to MG4 are for UT750 only.	
D1170 to D1173	Ten-segment linearizer unit setting parameters	PYA1 to PYB2	
D1174 to D1177	Contact input cofiguration parameters (UT551 only)	PIDNO.b0 to PIDNO.b3	
D1178, D1180		REM, LCL	

1.10 Controller Mode (UT mode), PV Input, and Control Output Parameters

Area for Controller Mode, PV Input, and Control Output Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1201	41201	04B0	IN1	*R/W	D1251	41251	04E2	DLN1	*R/W
D1202	41202	04B1	UNI1	*R/W	D1252	41252	04E3	ADR1	*R/W
D1203					D1253	41253	04E4	RP.T1	*R/W
D1204	41204	04B3	RH1	*R/W	D1254	41254	04E5	PSL2	*R/W
D1205	41205	04B4	RL1	*R/W	D1255	41255	04E6	BPS2	*R/W
D1206	41206	04B5	SDP1	R	D1256	41256	04E7	PRI2	*R/W
D1207	41207	04B6	SH1	*R/W	D1257	41257	04E8	STP2	*R/W
D1208	41208	04B7	SL1	*R/W	D1258	41258	04E9	DLN2	*R/W
D1209	41209	04B8	BSL1	*R/W	D1259	41259	04EA	ADR2	*R/W
D1210	41210	04B9	RJC1	*R/W	D1260	41260	04EB	RP.T2	*R/W
D1211	41211	04BA	IN2	*R/W	D1261	41261	04EC	V.RS	*R/W
D1212	41212	04BB	UNI2	*R/W	D1262	41262	04ED	V.L	*R/W
D1213					D1263	41263	04EE	V.H	*R/W
D1214	41214	04BD	RH2	*R/W	D1264	41264	04EF	TR.T	*R/W
D1215	41215	04BE	RL2	*R/W	D1265	41265	04F0	V.MOD	*R/W
D1216	41216	04BF	SDP2	R	D1266	41266	04F1	INIT	*R/W
D1217	41217	04C0	SH2	*R/W	D1267	41267	04F2	V.AT	*R/W
D1218	41218	04C1	SL2	*R/W	D1268	41268	04F3	A1H	*R/W
D1219	41219	04C2	BSL2	*R/W	D1269	41269	04F4	A1L	*R/W
D1220	41220	04C3	RJC2	*R/W	D1270	41270	04F5	A2H	*R/W
D1221	41221	04C4	IN3	*R/W	D1271	41271	04F6	A2L	*R/W
D1222	41222	04C5	UNI3	*R/W	D1272	41272	04F7	A3H	*R/W
D1223					D1273	41273	04F8	A3L	*R/W
D1224	41224	04C7	RH3	*R/W	D1274				
D1225	41225	04C8	RL3	*R/W	D1275				
D1226	41226	04C9	SDP3	R	D1276				
D1227	41227	04CA	SH3	*R/W	D1277				
D1228	41228	04CB	SL3	*R/W	D1278				
D1229	41229	04CC	BSL3	*R/W	D1279				
D1230	41230	04CD	P.UNI1	*R/W	D1280	41280	04FF	UTM	*R/W
D1231	41231	04CE	P.DP1	*R/W	D1281	41281	0500	SMP	*R/W
D1232	41232	04CF	P.RH1	*R/W	D1282				
D1233	41233	04D0	P.RL1	*R/W	D1283				
D1234	41234	04D1	P.UNI2	*R/W	D1284				
D1235	41235	04D2	P.DP2	*R/W	D1285				
D1236	41236	04D3	P.RH2	*R/W	D1286				
D1237	41237	04D4	P.RL2	*R/W	D1287				
D1238	41238	04D5	OT1	*R/W	D1288				
D1239	41239	04D6	OT2	*R/W	D1289				
D1240	41240	04D7	CT1	*R/W	D1290				
D1241	41241	04D8	CT2	*R/W	D1291				
D1242	41242	04D9	CTc1	*R/W	D1292				
D1243	41243	04DA	CTc2	*R/W	D1293				
D1244	41244	04DB	AO1	*R/W	D1294				
D1245	41245	04DC	AO2	*R/W	D1295				
D1246	41246	04DD	AO3	*R/W	D1296				
D1247	41247	04DE	PSL1	*R/W	D1297				
D1248	41248	04DF	BPS1	*R/W	D1298				
D1249	41249	04E0	PRI1	*R/W	D1299				
D1250	41250	04E1	STP1	*R/W	D1300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000 (UT550/UT520/UT551 only).

1.10.1 Data Area for Controller Mode (UT mode), PV Input, and Control Output Parameters

Register No.	Category	Description	Remarks
D1201 to D1210	Analog input 1 parameters	IN1 to RJC1	DP1 (D register number 1203) is not a parameter, and this register is read-only. For details on the parameters, see the User's Manual of UT750/UT550/UT520/UT551.
D1211 to D1220	Analog input 2 parameters	IN2 to RJC2 (UT750 only)	DP2 (D register number 1213) is not a parameter, and this register is read-only. For details on the parameters, see the User's Manual of UT750/UT550/UT520/UT551.
D1221 to D1229	Analog input 3 parameters	IN3 to BSL3	DP3 (D register number 1223) is not a parameter, and this register is read-only. For details on the parameters, see the User's Manual of UT750/UT550/UT520/UT551.
D1230 to D1233	PV input 1 parameters	P.UNI1 to P.RL1	For details on the parameters, see the User's Manual of UT750/UT550/UT520/UT551.
D1234 to D1237	PV input 2 parameters	P.UNI2 to P.RL2	
D1238 to D1243	Control output parameters	OT1 to CTc2; (CT2 to CTc2 are for UT750 only)	
D1247 to D1260	RS-485 communication parameters	PSL to RP.T2; (PSL.2 to RP.T2 are for UT750 only)	
D1244 to D1246	Analog output 1 to 3 types	AO1 to AO3	
D1261 to D1265	Valve calibration parameters	V.RS to V.MOD	
D1266	Parameter initialization	INIT	
D1267	Automatic valve adjustment	V.AT	
D1268 to D1273	Analog output scales	A1H to A3L	
D1280	UT mode parameter	UTM	
D1281	Control period parameter	SMP	

1.11 Input Block Area for Custom Computation (UT750 only)

Area for Input Block (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1301	41301	0514	AIN1	R/W	D1351	41351	0546	SP.b0	R/W
D1302	41302	0515	AIN2	R/W	D1352	41352	0547	SP.b1	R/W
D1303	41303	0516	ANI3	R/W	D1353	41353	0548	SP.b2	R/W
D1304					D1354	41354	0549	SP.b3	R/W
D1305					D1355	41355	054A	DP1	R/W
D1306					D1356	41356	054B	DP2	R/W
D1307					D1357	41357	054C	MG1	R/W
D1308					D1358	41358	054D	MG2	R/W
D1309					D1359	41359	054E	MG3	R/W
D1310					D1360	41360	054F	MG4	R/W
D1311					D1361				
D1312					D1362				
D1313					D1363				
D1314					D1364				
D1315					D1365				
D1316					D1366				
D1317					D1367				
D1318					D1368				
D1319					D1369				
D1320					D1370				
D1321					D1371				
D1322					D1372				
D1323					D1373				
D1324					D1374				
D1325					D1375				
D1326					D1376				
D1327					D1377				
D1328					D1378				
D1329					D1379				
D1330					D1380				
D1331	41331	0532	PVIN.1	R/W	D1381				
D1332	41332	0533	PVIN.2	R/W	D1382				
D1333	41333	0534	RSPIN.1	R/W	D1383				
D1334	41334	0535	RSPIN.2	R/W	D1384				
D1335	41335	0536	GAIN.1	R/W	D1385				
D1336	41336	0537	GAIN.2	R/W	D1386				
D1337	41337	0538	TRG.1	R/W	D1387				
D1338	41338	0539	TRG.2	R/W	D1388				
D1339	41339	053A	TRF.1	R/W	D1389				
D1340	41340	053B	TRF.2	R/W	D1390				
D1341					D1391				
D1342					D1392				
D1343	41343	053E	A/M.1	R/W	D1393				
D1344	41344	053F	A/M.2	R/W	D1394				
D1345	41345	0540	R/L.1	R/W	D1395				
D1346	41346	0541	R/L.2	R/W	D1396				
D1347	41347	0542	S/R	R/W	D1397				
D1348	41348	0543	CAS	R/W	D1398				
D1349	41349	0544	AUTO	R/W	D1399				
D1350	41350	0545	MAN	R/W	D1400				

Area for Input Block (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1401	41401	0578	MO1L	R/W	D1451	41451	05AA	MO26L	R/W
D1402	41402	0579	MO1H	R/W	D1452	41452	05AB	MO26H	R/W
D1403	41403	057A	MO2L	R/W	D1453	41453	05AC	MO27L	R/W
D1404	41404	057B	MO2H	R/W	D1454	41454	05AD	MO27H	R/W
D1405	41405	057C	MO3L	R/W	D1455	41455	05AE	MO28L	R/W
D1406	41406	057D	MO3H	R/W	D1456	41456	05AF	MO28H	R/W
D1407	41407	057E	MO4L	R/W	D1457	41457	05B0	MO29L	R/W
D1408	41408	057F	MO4H	R/W	D1458	41458	05B1	MO29H	R/W
D1409	41409	0580	MO5L	R/W	D1459	41459	05B2	MO30L	R/W
D1410	41410	0581	MO5H	R/W	D1460	41460	05B3	MO30H	R/W
D1411	41411	0582	MO6L	R/W	D1461	41461	05B4	MO31L	R/W
D1412	41412	0583	MO6H	R/W	D1462	41462	05B5	MO31H	R/W
D1413	41413	0584	MO7L	R/W	D1463	41463	05B6	MO32L	R/W
D1414	41414	0585	MO7H	R/W	D1464	41464	05B7	MO32H	R/W
D1415	41415	0586	MO8L	R/W	D1465	41465	05B8	MO33L	R/W
D1416	41416	0587	MO8H	R/W	D1466	41466	05B9	MO33H	R/W
D1417	41417	0588	MO9L	R/W	D1467	41467	05BA	MO34L	R/W
D1418	41418	0589	MO9H	R/W	D1468	41468	05BB	MO34H	R/W
D1419	41419	058A	MO10L	R/W	D1469	41469	05BC	MO35L	R/W
D1420	41420	058B	MO10H	R/W	D1470	41470	05BD	MO35H	R/W
D1421	41421	058C	MO11L	R/W	D1471	41471	05BE	MO36L	R/W
D1422	41422	058D	MO11H	R/W	D1472	41472	05BF	MO36H	R/W
D1423	41423	058E	MO12L	R/W	D1473	41473	05C0	MO37L	R/W
D1424	41424	058F	MO12H	R/W	D1474	41474	05C1	MO37H	R/W
D1425	41425	0590	MO13L	R/W	D1475	41475	05C2	MO38L	R/W
D1426	41426	0591	MO13H	R/W	D1476	41476	05C3	MO38H	R/W
D1427	41427	0592	MO14L	R/W	D1477	41477	05C4	MO39L	R/W
D1428	41428	0593	MO14H	R/W	D1478	41478	05C5	MO39H	R/W
D1429	41429	0594	MO15L	R/W	D1479	41479	05C6	MO40L	R/W
D1430	41430	0595	MO15H	R/W	D1480	41480	05C7	MO40H	R/W
D1431	41431	0596	MO16L	R/W	D1481	41481	05C8	MO41L	R/W
D1432	41432	0597	MO16H	R/W	D1482	41482	05C9	MO41H	R/W
D1433	41433	0598	MO17L	R/W	D1483	41483	05CA	MO42L	R/W
D1434	41434	0599	MO17H	R/W	D1484	41484	05CB	MO42H	R/W
D1435	41435	059A	MO18L	R/W	D1485	41485	05CC	MO43L	R/W
D1436	41436	059B	MO18H	R/W	D1486	41486	05CD	MO43H	R/W
D1437	41437	059C	MO19L	R/W	D1487	41487	05CE	MO44L	R/W
D1438	41438	059D	MO19H	R/W	D1488	41488	05CF	MO44H	R/W
D1439	41439	059E	MO20L	R/W	D1489	41489	05D0	MO45L	R/W
D1440	41440	059F	MO20H	R/W	D1490	41490	05D1	MO45H	R/W
D1441	41441	05A0	MO21L	R/W	D1491	41491	05D2	MO46L	R/W
D1442	41442	05A1	MO21H	R/W	D1492	41492	05D3	MO46H	R/W
D1443	41443	05A2	MO22L	R/W	D1493	41493	05D4	MO47L	R/W
D1444	41444	05A3	MO22H	R/W	D1494	41494	05D5	MO47H	R/W
D1445	41445	05A4	MO23L	R/W	D1495	41495	05D6	MO48L	R/W
D1446	41446	05A5	MO23H	R/W	D1496	41496	05D7	MO48H	R/W
D1447	41447	05A6	MO24L	R/W	D1497	41497	05D8	MO49L	R/W
D1448	41448	05A7	MO24H	R/W	D1498	41498	05D9	MO49H	R/W
D1449	41449	05A8	MO25L	R/W	D1499	41499	05DA	MO50L	R/W
D1450	41450	05A9	MO25H	R/W	D1500	41500	05DB	MO50H	R/W

1.12 Output Block Area for Custom Computation (UT750 only)

Area for Output Block (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1501	41501	05DC	PV.1	R/W	D1551	41551	060E	R251	R/W
D1502	41502	05DD	PV.2	R/W	D1552	41552	060F	R252	R/W
D1503	41503	05DE	CSP.1	R/W	D1553	41553	0610	R253	R/W
D1504	41504	05DF	CSP.2	R/W	D1554	41554	0611	R254	R/W
D1505	41505	05E0	OUT.1	R/W	D1555	41555	0612	R255	R/W
D1506	41506	05E1	OUT.2	R/W	D1556	41556	0613	R256	R/W
D1507	41507	05E2	HOUT.1	R/W	D1557	41557	0614	R257	R/W
D1508	41508	05E3	HOUT.2	R/W	D1558	41558	0615	R258	R/W
D1509	41509	05E4	COUT.1	R/W	D1559				
D1510	41510	05E5	COUT.2	R/W	D1560				
D1511	41511	05E6	RET1	R/W	D1561				
D1512	41512	05E7	RET2	R/W	D1562				
D1513					D1563				
D1514					D1564				
D1515					D1565				
D1516					D1566				
D1517					D1567				
D1518					D1568				
D1519					D1569				
D1520					D1570				
D1521					D1571				
D1522					D1572				
D1523					D1573				
D1524					D1574				
D1525					D1575				
D1526					D1576				
D1527					D1577				
D1528					D1578				
D1529					D1579				
D1530					D1580				
D1531	41531	05FA	OUT1A	R/W	D1581				
D1532	41532	05FB	OUT2A	R/W	D1582				
D1533	41533	05FC	OUT3A	R/W	D1583				
D1534	41534	05FD	OUT1R	R/W	D1584				
D1535	41535	05FE	OUT2R	R/W	D1585				
D1536	41536	05FF	DO1	R/W	D1586				
D1537	41537	0600	DO2	R/W	D1587				
D1538	41538	0601	DO3	R/W	D1588				
D1539	41539	0602	DO4	R/W	D1589				
D1540	41540	0603	DO5	R/W	D1590				
D1541	41541	0604	DO6	R/W	D1591				
D1542	41542	0605	DO7	R/W	D1592				
D1543	41543	0606	R151	R/W	D1593				
D1544	41544	0607	R152	R/W	D1594				
D1545	41545	0608	R153	R/W	D1595				
D1546	41546	0609	R154	R/W	D1596				
D1547	41547	060A	R155	R/W	D1597				
D1548	41548	060B	R156	R/W	D1598				
D1549	41549	060C	R157	R/W	D1599				
D1550	41550	060D	R158	R/W	D1600				

Area for Output Block (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1601	41601	0640	MO1L	R/W	D1651	41651	0672	MO26L	R/W
D1602	41602	0641	MO1	R/W	D1652	41652	0673	MO26H	R/W
D1603	41603	0642	MO2L	R/W	D1653	41653	0674	MO27L	R/W
D1604	41604	0643	MO2H	R/W	D1654	41654	0675	MO27H	R/W
D1605	416505	0644	MO3L	R/W	D1655	41655	0676	MO28L	R/W
D1606	41606	0645	MO3H	R/W	D1656	41656	0677	MO28H	R/W
D1607	41607	0646	MO4L	R/W	D1657	41657	0678	MO29L	R/W
D1608	41608	0647	MO4H	R/W	D1658	41658	0679	MO29H	R/W
D1609	41609	0648	MO5L	R/W	D1659	41659	067A	MO30L	R/W
D1610	41610	0649	MO5H	R/W	D1660	41660	067B	MO30H	R/W
D1611	41611	064A	MO6L	R/W	D1661	41661	067C	MO31L	R/W
D1612	41612	064B	MO6H	R/W	D1662	41662	067D	MO31H	R/W
D1613	41613	064C	MO7L	R/W	D1663	41663	067E	MO32L	R/W
D1614	41614	064D	MO7H	R/W	D1664	41664	067F	MO32H	R/W
D1615	41615	064E	MO8L	R/W	D1665	41665	0680	MO33L	R/W
D1616	41616	064F	MO8H	R/W	D1666	41666	0681	MO33H	R/W
D1617	41617	0650	MO9L	R/W	D1667	41667	0682	MO34L	R/W
D1618	41618	0651	MO9H	R/W	D1668	41668	0683	MO34H	R/W
D1619	41619	0652	MO10L	R/W	D1669	41669	0684	MO35L	R/W
D1620	41620	0653	MO10H	R/W	D1670	41670	0685	MO35H	R/W
D1621	41621	0654	MO11L	R/W	D1671	41671	0686	MO36L	R/W
D1622	41622	0655	MO11H	R/W	D1672	41672	0687	MO36H	R/W
D1623	41623	0656	MO12L	R/W	D1673	41673	0688	MO37L	R/W
D1624	41624	0657	MO12H	R/W	D1674	41674	0689	MO37H	R/W
D1625	41625	0658	MO13L	R/W	D1675	41675	068A	MO38L	R/W
D1626	41626	0659	MO13H	R/W	D1676	41676	068B	MO38H	R/W
D1627	41627	065A	MO14L	R/W	D1677	41677	068C	MO39L	R/W
D1628	41628	065B	MO14H	R/W	D1678	41678	068D	MO39H	R/W
D1629	41629	065C	MO15L	R/W	D1679	41679	068E	MO40L	R/W
D1630	41630	065D	MO15H	R/W	D1680	41680	068F	MO40H	R/W
D1631	41631	065E	MO16L	R/W	D1681	41681	0690	MO41L	R/W
D1632	41632	065F	MO16H	R/W	D1682	41682	0691	MO41H	R/W
D1633	41633	0660	MO17L	R/W	D1683	41683	0692	MO42L	R/W
D1634	41634	0661	MO17H	R/W	D1684	41684	0693	MO42H	R/W
D1635	41635	0662	MO18L	R/W	D1685	41685	0694	MO43L	R/W
D1636	41636	0663	MO18H	R/W	D1686	41686	0695	MO43H	R/W
D1637	41637	0664	MO19L	R/W	D1687	41687	0696	MO44L	R/W
D1638	41638	0665	MO19H	R/W	D1688	41688	0697	MO44H	R/W
D1639	41639	0666	MO20L	R/W	D1689	41689	0698	MO45L	R/W
D1640	41640	0667	MO20H	R/W	D1690	41690	0699	MO45H	R/W
D1641	41641	0668	MO21L	R/W	D1691	41691	069A	MO46L	R/W
D1642	41642	0669	MO21H	R/W	D1692	41692	069B	MO46H	R/W
D1643	41643	066A	MO22L	R/W	D1693	41693	069C	MO47L	R/W
D1644	41644	066B	MO22H	R/W	D1694	41694	069D	MO47H	R/W
D1645	41645	066C	MO23L	R/W	D1695	41695	069E	MO48L	R/W
D1646	41646	066D	MO23H	R/W	D1696	41696	069F	MO48H	R/W
D1647	41647	066E	MO24L	R/W	D1697	41697	06A0	MO49L	R/W
D1648	41648	066F	MO24H	R/W	D1698	41698	06A1	MO49H	R/W
D1649	41649	0670	MO25L	R/W	D1699	41699	06A2	MO50L	R/W
D1650	41650	0671	MO25H	R/W	D1700	41700	06A3	MO50H	R/W

2. Functions and Use of D Registers (UT450/UT420)

2.1 Overview

This section explains the functions and use of D registers.

D registers store parameter data, flag data and process data of the GREEN Series controller. You can readily use these internal data items by reading from or writing to the D registers.

You can use D registers to perform:

- **Centralized control using a higher-level device**
- **Data exchange by reading/writing data from/to a higher-level device**

2.2 Interpretation of D Register Tables

This section explains how to read the D Register Map tables in this chapter. The numbers listed in the leftmost column are D register numbers ((1) below). The five-digit numbers in the next column are reference numbers used for MODBUS communication ((2) below). The numbers in the column third from left are register numbers in hexadecimal notation used in MODBUS communication programs ((3) below). Each register code name in the D Register Map tables represents a specific process data item, operation parameter, setup parameter or other data items such as a flag. For details on the operation parameters and setup parameters, see the user's manual of UT450/UT420.

Name of D Register Map				
D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R

(1) D register number

(2) Reference number (for MODBUS communication)

(3) Hex number (for MODBUS communication program)

Permission of read/write by communication

An asterisk (*) in this column indicates that the number of writing actions is limited to 100,000.

■ Names of D Registers

The base names of some D registers are preceded by a combination of a number and then a period as shown in the format Y.□□□. (Y: group number)

Examples:

- The name 3.SP means the SP of group 3.

2.3 Classification of D Registers

■ Classification of D Register Map Tables

The table below outlines how the D registers are classified by their numbers in the D Register Map tables.

Table 2.1 Classification of D Registers

Register No.	Area and data categories		Description	Reference
D0001 to D0049	Process data area (Note 1)	Data displayed for operation	PV, SP, OUT, and others	Section 2.4
D0050 to D0100	User area (Note 2), represented by shaded cells in the table	—	If a graphic panel is used, this area is used for communication with the graphic panel.	Section 2.4
D0101 to D0200	Cannot be used.			
D0201 to D0230	Operation parameters (Note 1)	Operation mode parameters	A/M, MOUT, and others	Section 2.5
D0231 to D0300		Computation parameters	AT, SC, BS, FL, and others	Section 2.5
D0301 to D0500		PID parameters	P, I, D, and others	Section 2.6
D0501 to D0900	Cannot be used			
D0901 to D1000	Setup parameters (Note 1)	Control action parameters	OPR, MOD	Section 2.7
D1001 to D1100		Common function parameters	RET, DVB	Section 2.7
D1101 to D1200		SELECT display registration parameters	CS	Section 2.7
D1201 to D1300		PV input, control output, and communication parameters	IN, OT, PSL	Section 2.8

Note 1: Data for process values, operation parameters and setup parameters are stored in the types (PV input range, PV input range span, %, or ABS without the decimal point) indicated in the Operation Parameter Lists and Setup Parameter Lists of the user s manual of UT450/UT420. The OFF and ON states are represented by 0 and 1, respectively. D registers D0001 to D0049 are read-only.

Note 2: When communicating with a graphic panel, do not write to or read from this area (D0050 to D0100) because this area is reserved for 16-bit register data used by graphic panels.

[See Also] Section 2.4, Process Data and User Area.

NOTE

It is prohibited to read/write data by communication from/to the registers of blank cells in the register map tables. If you attempt to do so, the UT450/UT420 may not operate properly.

2.4 Process Data and User Area

Area for Process Data									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R	D0051	40051	0032		R/W
D0002	40002	0001	ERROR	R	D0052	40052	0033		R/W
D0003	40003	0002	PV	R	D0053	40053	0034		R/W
D0004	40004	0003	CSP	R	D0054	40054	0035		R/W
D0005	40005	0004	OUT	R	D0055	40055	0036		R/W
D0006	40006	0005	HOUT	R	D0056	40056	0037		R/W
D0007	40007	0006	COUT	R	D0057	40057	0038		R/W
D0008	40008	0007	MOD	R	D0058	40058	0039		R/W
D0009	40009	0008	PIDNO	R	D0059	40059	003A		R/W
D0010	40010	0009	CSPNO	R	D0060	40060	003B		R/W
D0011	40011	000A	ALM	R	D0061	40061	003C		R/W
D0012					D0062	40062	003D		R/W
D0013					D0063	40063	003E		R/W
D0014					D0064	40064	003F		R/W
D0015					D0065	40065	0040		R/W
D0016					D0066	40066	0041		R/W
D0017					D0067	40067	0042		R/W
D0018					D0068	40068	0043		R/W
D0019					D0069	40069	0044		R/W
D0020					D0070	40070	0045		R/W
D0021					D0071	40071	0046		R/W
D0022					D0072	40072	0047		R/W
D0023					D0073	40073	0048		R/W
D0024					D0074	40074	0049		R/W
D0025					D0075	40075	004A		R/W
D0026	40026	0019	DEV	R	D0076	40076	004B		R/W
D0027	40027	001A	OR	R	D0077	40077	004C		R/W
D0028					D0078	40078	004D		R/W
D0029					D0079	40079	004E		R/W
D0030					D0080	40080	004F		R/W
D0031					D0081	40081	0050		R/W
D0032					D0082	40082	0051		R/W
D0033	40033	0020	DISTS	R	D0083	40083	0052		R/W
D0034					D0084	40084	0053		R/W
D0035	40035	0022	PARAERR	R	D0085	40085	0054		R/W
D0036	40036	0023	ALOSTS	R	D0086	40086	0055		R/W
D0037	40037	0024	TIM1	R	D0087	40087	0056		R/W
D0038	40038	0025	TIM2	R	D0088	40088	0057		R/W
D0039					D0089	40089	0058		R/W
D0040					D0090	40090	0059		R/W
D0041					D0091	40091	005A		R/W
D0042					D0092	40092	005B		R/W
D0043					D0093	40093	005C		R/W
D0044					D0094	40094	005D		R/W
D0045					D0095	40095	005E		R/W
D0046					D0096	40096	005F		R/W
D0047					D0097	40097	0060		R/W
D0048					D0098	40098	0061		R/W
D0049					D0099	40099	0062		R/W
D0050	40050	0031		R/W	D0100	40100	0063		R/W

Shaded area : User area (You cannot use these registers when a graphic panel is used.)

2.4.1 Process Data Area (Read-only)

Some of the registers in this area (D0001 to D0049, read-only) are designed to represent two or more events, such as errors and statuses, using combinations of bits within the register. If any of the events shown in the following tables occur, the corresponding bit is set to 1. The bit remains 0 if the event does not occur. Note that bits with blank fields in the tables are not in use.

● Bit Configuration of D0001: ADERROR (Input Error)

Bit	Code	Event
0	AD1ERR.st	Input-1 A/D converter error
1		
2	AD3ERR.st	Input-3 A/D converter error
3		
4	AD1BO.st	Input-1 burnout error
5		
6	AD3BO.st	Input-3 burnout error
7		
8	RJC1ERR.st	Input-1 RJC error
9 to 15		

● Bit Configuration of D0002: ERROR (PV Error)

Bit	Code	Event
0	PVADC.st	PV A/D converter error
1	PVBO.st	PV burnout error
2	RJCERR.st	PV RJC error
3		
4	PV+over.st	PV over-scale
5	PV-over.st	PV under-scale
6, 7		
8	RSPADC.st	RSP A/D converter error
9	RSPBO.st	RSP burnout error
10, 11		
12	C.RSPADC.st	RSP A/D converter error when RSP is used for control
13	C.RSPBO.st	Burnout error when RSP is used for control
14	ATERR.st	Auto-tuning error
15		

● D0003: PV (Measured input value)

● D0004: CSP (Current target setpoint [SP])

● D0005: OUT (Control output value [OUT])

- During PID computation, you can read the computation result as is from this register. For example, when the computation result is 75.0%, the register contains a value of “750.”
- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains a value half the PID computation result.

● D0006: HOUT (Heating-side control output in Heating/Cooling Control)

- During heating/cooling computation, this register contains the heating-side control output value.

● D0007: COUT (Cooling-side control output in Heating/Cooling Control)

- During heating/cooling computation, this register contains the cooling-side control output value.

● Bit Configuration of D0008: MOD (Operation mode)

Bit	Code	Event
0	A/M.st	0: AUTO; 1: MAN
1	R/L.st	0: Local; 1: Remote
2	R/S.st	0: Run; 1: Stop
3 to 13		
14	AT.st	0: Auto-tuning is OFF; 1: Auto-tuning is ON
15		

● D0009: PIDNO (Current PID number)

Bit	Code	Event
0	PIDNO.0	Bit 0 of the current PID number
1	PIDNO.1	Bit 1 of the current PID number
2	PIDNO.2	Bit 2 of the current PID number
3	PIDNO.3	Bit 3 of the current PID number
4 to 15		

From this register, you can read the PID number currently in use in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = on”, which is represented as “0101” in binary notation and as “5” in decimal notation, indicates that the PID number currently being used is 5.

● D0010: CSPNO (Current target-setpoint number)

Bit	Code	Event
0	CSPNO1.0	Bit 0 of CSP (current SP number)
1	CSPNO1.1	Bit 1 of CSP (current SP number)
2	CSPNO1.2	Bit 2 of CSP (current SP number)
3	CSPNO1.3	Bit 3 of CSP (current SP number)
4 to 15		

From this register, you can read the SP number of the currently used target setpoint in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = on”, which is represented as “0101” in binary notation and as “5” in decimal notation, indicates that the target setpoint value of 5.SP is now being used.

● Bit Configuration of D0011: ALM (Alarm Status)

Bit	Code	Event
0	ALM1.st	‘1’ when alarm 1 is ON; ‘0’ when OFF
1	ALM2.st	‘1’ when alarm 2 is ON; ‘0’ when OFF
2	ALM3.st	‘1’ when alarm 3 is ON; ‘0’ when OFF
3		
4	ALM4.st	‘1’ when alarm 4 is ON; ‘0’ when OFF
5	OR.st	‘1’ when sensor grounding alarm is ON; ‘0’ when OFF
6 to 15		

[See Also] User’s Manual of UT450/UT420

● D0026: DEV (Deviation)

● D0027: OR (Moving average of sensor grounding alarm)

● Bit Configuration of D0033: DISTS (Statuses of External Contact Inputs)

Bit	Code	Event
0	DI1.st	Status of external contact input terminal 1 (1: contact is ON; 0: contact is OFF)
1	DI2.st	Status of external contact input terminal 2 (1: contact is ON; 0: contact is OFF)
2	DI3.st	Status of external contact input terminal 3 (1: contact is ON; 0: contact is OFF)
3	DI4.st	Status of external contact input terminal 4 (1: contact is ON; 0: contact is OFF)
4	DI5.st	Status of external contact input terminal 5 (1: contact is ON; 0: contact is OFF)
5	DI6.st	Status of external contact input terminal 6 (1: contact is ON; 0: contact is OFF)
6		
7	DI8.st	Status of external contact input terminal 8 (1: contact is ON; 0: contact is OFF)
8 to 15		

Functions assigned to external contact inputs vary depending on whether or not functions have been assigned to the contact inputs.

[See Also] User's manual of UT450/UT420, for the function assignments of external contact inputs.

● Bit Configuration of D0035: PARAERR (Error in calibration values and parameters)

Bit	Code	Event
0	CALB.E.st	Calibration value error
1 to 4		
5	RANGE.st	Input range data error
6	SETUP.st	Setup parameter error
7		
8	PARA.E.st	Operation parameter error
9	MODE.E.st	Error in power-failure backup data
10, 11		
12	EEP.E.st	EEPROM error
13		
14	SYSTEM.E.st	System data error
15		

● Bit Configuration of D0036: ALOSTS (Status of alarm output)

Bit	Code	Event
0	ALO1	Status of output assigned with alarm 1 0: alarm is OFF for “energized” type alarm or ON for“deenergized” type alarm (the relay contact is open) 1: alarm is ON for “energized” type alarm or OFF for “deenergized” type alarm (the relay contact is closed)
1	ALO2	Status of output assigned with alarm 2 Bit status information is the same as bit 0.
2	ALO3	Status of output assigned with alarm 3 Bit status information is the same as bit 0.
3		
4	ALO4	Status of output assigned with alarm 4 Bit status information is the same as bit 0.
5 to 15		

● D0037/38: TIM1/2 (Remaining timer count value for timer function)

2.4.2 User Area

Register No.	Category	Description
D0050 to D0100	User area	Users can read/write data from/to the registers in this area. However, if a graphic panel is used in the system, users cannot use this area.

2.5 Operation Mode and Computation Parameters

Area for Operation Mode and Computation Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0201	40201	00C8	A/M	R/W	D0251	40251	00FA	ORH	*R/W
D0202					D0252	40252	00FB	ORL	*R/W
D0203	40203	00CA	R/L	R/W	D0253				
D0204					D0254				
D0205	40205	00CC	S/R	R/W	D0255				
D0206					D0256				
D0207	40207	00CE	SPN	R/W	D0257				
D0208					D0258				
D0209					D0259				
D0210					D0260				
D0211					D0261				
D0212					D0262				
D0213					D0263				
D0214					D0264				
D0215	40215	00D6	C.RSP	R/W	D0265				
D0216					D0266				
D0217	40217	00D8	MOUT	R/W	D0267				
D0218	40218	00D9	MOUTc	R/W	D0268				
D0219					D0269				
D0220					D0270				
D0221					D0271				
D0222					D0272				
D0223					D0273				
D0224					D0274				
D0225					D0275				
D0226					D0276				
D0227					D0277				
D0228					D0278				
D0229					D0279				
D0230					D0280				
D0231	40231	00E6	A1	R/W	D0281				
D0232	40232	00E7	A2	R/W	D0282				
D0233	40233	00E8	A3	R/W	D0283				
D0234	40234	00E9	A4	R/W	D0284				
D0235					D0285				
D0236					D0286				
D0237					D0287				
D0238					D0288				
D0239					D0289				
D0240					D0290				
D0241	40241	00F0	AT	*R/W	D0291				
D0242	40242	00F1	SC	*R/W	D0292				
D0243	40243	00F2	BS	*R/W	D0293				
D0244	40244	00F3	FL	*R/W	D0294				
D0245	40245	00F4	UPR	*R/W	D0295				
D0246	40246	00F5	DNR	*R/W	D0296				
D0247	40247	00F6	RT	*R/W	D0297				
D0248	40248	00F7	RBS	*R/W	D0298				
D0249	40249	00F8	RFL	*R/W	D0299				
D0250	40250	00F9	ORB	*R/W	D0300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

2.5.1 Operation Mode Information

The mode registers listed below are designed to show, by the value contained, which mode is selected.

You can change the mode by writing a different mode to the register via communication.

● D0201: A/M (AUTO/MAN modes)

When D0201 = 0, the controller is in the AUTO (automatic) mode.

When D0201 = 1, the controller is in the MAN (manual) mode.

● D0203: R/L (REMOTE/LOCAL modes)

When D0203 = 0, the controller is in the LOCAL mode.

When D0203 = 1, the controller is in the REMOTE mode.

● D0205: S/R (STOP/RUN modes)

When D0205 = 0, the controller is in the RUN mode.

When D0205 = 1, the controller is in the STOP mode.

When the DI function selection parameter DIS of setup parameters is set to “0”, you can write via communication.

2.5.2 Write-only Data Area

The registers listed below are write-only registers that are accessed by a higher-level device.

For example, to set 150.0˚C in the C.RSP.1 register, write 1500 in the register.

Register No.	Code	Description
D0215	C.RSP	Used to set SP value.
D0217	MOUT	Used to set control output value or heating-side control output value in the MAN mode.
D0218	MOUTc	Used to set cooling-side control output value in the MAN mode.

■ Writing an SP Value

An SP value can be written via communication only when the controller is in the REMOTE mode.

(1) Set the remote input selection parameter RMS to “COM.”

(2) Write the SP value into the C.RSP register.

(3) Set the controller to the REMOTE mode.

In this way, you can operate the controller to set SP values via communication.

■ Writing a Control Output Value in MAN Mode

You can write a control output value via communication only when the controller is in MAN mode.

(1) Set the controller to the MAN mode.

(2) Write the control output value to MOUT or MOUTc register.

In this way, you can operate the controller in MAN mode to set control output values via communication.

■ Manipulating Valves (UT450-1 □ only)

In the MAN mode with position-proportional PID computation, write a valve position to the MOUT register.

2.5.3 Data Area for Computation Parameters

Register No.	Category	Description	Remarks
D0231 to D0234	Alarm setpoint parameters	A1 to A4: Alarm setpoints for alarm 1 to 4	For details on the parameters, see the User s Manual of UT450/UT420.
D0241 to D0252	Computation parameters	AT: Auto-tuning selection SC: SUPER function selection BS: PV bias FL: PV filter UPR: Setpoint ramp-up rate DNR: Setpoint ramp-down rate RT: Ratio setting RBS: Remote bias RFL: Remote input filter ORB: ON/OFF rate detection band ORH: ON/OFF rate high-limit ORL: ON/OFF rate low-limit	

2.6 PID Parameters

Area for PID Parameters (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0301	40301	012C	1.SP	R/W	D0351	40351	015E	3.SP	R/W
D0302					D0352				
D0303					D0353				
D0304					D0354				
D0305					D0355				
D0306	40306	0131	1.P	*R/W	D0356	40356	0163	3.P	*R/W
D0307	40307	0132	1.I	*R/W	D0357	40357	0164	3.I	*R/W
D0308	40308	0133	1.D	*R/W	D0358	40358	0165	3.D	*R/W
D0309	40309	0134	1.OH	*R/W	D0359	40359	0166	3.OH	*R/W
D0310	40310	0135	1.OL	*R/W	D0360	40360	0167	3.OL	*R/W
D0311	40311	0136	1.MR	*R/W	D0361	40361	0168	3.MR	*R/W
D0312	40312	0137	1.H	*R/W	D0362	40362	0169	3.H	*R/W
D0313	40313	0138	1.DR	*R/W	D0363	40363	016A	3.DR	*R/W
D0314	40314	0139	1.Pc	*R/W	D0364	40364	016B	3.Pc	*R/W
D0315	40315	013A	1.Ic	*R/W	D0365	40365	016C	3.Ic	*R/W
D0316	40316	013B	1.Dc	*R/W	D0366	40366	016D	3.Dc	*R/W
D0317	40317	013C	1.Hc	*R/W	D0367	40367	016E	3.Hc	*R/W
D0318	40318	013D	1.DB	*R/W	D0368	40368	016F	3.DB	*R/W
D0319	40319	013E	1.RP	*R/W	D0369	40369	0170	3.RP	*R/W
D0320	40320	013F	1.PO	*R/W	D0370	40370	0171	3.PO	*R/W
D0321	40321	0140	1.Oc	*R/W	D0371	40371	0172	3.Oc	*R/W
D0322					D0372				
D0323					D0373				
D0324					D0374				
D0325					D0375				
D0326	40326	0145	2.SP	R/W	D0376	40376	0177	4.SP	R/W
D0327					D0377				
D0328					D0378				
D0329					D0379				
D0330					D0380				
D0331	40331	014A	2.P	*R/W	D0381	40381	017C	4.P	*R/W
D0332	40332	014B	2.I	*R/W	D0382	40382	017D	4.I	*R/W
D0333	40333	014C	2.D	*R/W	D0383	40383	017E	4.D	*R/W
D0334	40334	014D	2.OH	*R/W	D0384	40384	017F	4.OH	*R/W
D0335	40335	014E	2.OL	*R/W	D0385	40385	0180	4.OL	*R/W
D0336	40336	014F	2.MR	*R/W	D0386	40386	0181	4.MR	*R/W
D0337	40337	0150	2.H	*R/W	D0387	40387	0182	4.H	*R/W
D0338	40338	0151	2.DR	*R/W	D0388	40388	0183	4.DR	*R/W
D0339	40339	0152	2.Pc	*R/W	D0389	40389	0184	4.Pc	*R/W
D0340	40340	0153	2.Ic	*R/W	D0390	40390	0185	4.Ic	*R/W
D0341	40341	0154	2.Dc	*R/W	D0391	40391	0186	4.Dc	*R/W
D0342	40342	0155	2.Hc	*R/W	D0392	40392	0187	4.Hc	*R/W
D0343	40343	0156	2.DB	*R/W	D0393	40393	0188	4.DB	*R/W
D0344	40344	0157	2.RP	*R/W	D0394	40394	0189	4.RP	*R/W
D0345	40345	0158	2.PO	*R/W	D0395	40395	018A	4.PO	*R/W
D0346	40346	0159	2.Oc	*R/W	D0396	40396	018B	4.Oc	*R/W
D0347					D0397				
D0348					D0398				
D0349					D0399				
D0350					D0400				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

Area for PID Parameters (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0401	40401	0190	5.SP	R/W	D0451	40451	01C2	7.SP	R/W
D0402					D0452				
D0403					D0453				
D0404					D0454				
D0405					D0455				
D0406	40406	0195	5.P	*R/W	D0456	40456	01C7	7.P	*R/W
D0407	40407	0196	5.I	*R/W	D0457	40457	01C8	7.I	*R/W
D0408	40408	0197	5.D	*R/W	D0458	40458	01C9	7.D	*R/W
D0409	40409	0198	5.OH	*R/W	D0459	40459	01CA	7.OH	*R/W
D0410	40410	0199	5.OL	*R/W	D0460	40460	01CB	7.OL	*R/W
D0411	40411	019A	5.MR	*R/W	D0461	40461	01CC	7.MR	*R/W
D0412	40412	019B	5.H	*R/W	D0462	40462	01CD	7.H	*R/W
D0413	40413	019C	5.DR	*R/W	D0463	40463	01CE	7.DR	*R/W
D0414	40414	019D	5.Pc	*R/W	D0464	40464	01CF	7.Pc	*R/W
D0415	40415	019E	5.Ic	*R/W	D0465	40465	01D0	7.Ic	*R/W
D0416	40416	019F	5.Dc	*R/W	D0466	40466	01D1	7.Dc	*R/W
D0417	40417	01A0	5.Hc	*R/W	D0467	40467	01D2	7.Hc	*R/W
D0418	40418	01A1	5.DB	*R/W	D0468	40468	01D3	7.DB	*R/W
D0419	40419	01A2	5.RP	*R/W	D0469	40469	01D4	RHY	*R/W
D0420	40420	01A3	5.PO	*R/W	D0470	40470	01D5	7.PO	*R/W
D0421	40421	01A4	5.Oc	*R/W	D0471	40471	01D6	7.Oc	*R/W
D0422					D0472				
D0423					D0473				
D0424					D0474				
D0425					D0475				
D0426	40426	01A9	6.SP	R/W	D0476	40476	01DB	8.SP	R/W
D0427					D0477				
D0428					D0478				
D0429					D0479				
D0430					D0480				
D0431	40431	01AE	6.P	*R/W	D0481	40481	01E0	8.P	*R/W
D0432	40432	01AF	6.I	*R/W	D0482	40482	01E1	8.I	*R/W
D0433	40433	01B0	6.D	*R/W	D0483	40483	01E2	8.D	*R/W
D0434	40434	01B1	6.OH	*R/W	D0484	40484	01E3	8.OH	*R/W
D0435	40435	01B2	6.OL	*R/W	D0485	40485	01E4	8.OL	*R/W
D0436	40436	01B3	6.MR	*R/W	D0486	40486	01E5	8.MR	*R/W
D0437	40437	01B4	6.H	*R/W	D0487	40487	01E6	8.H	*R/W
D0438	40438	01B5	6.DR	*R/W	D0488	40488	01E7	8.DR	*R/W
D0439	40439	01B6	6.Pc	*R/W	D0489	40489	01E8	8.Pc	*R/W
D0440	40440	01B7	6.Ic	*R/W	D0490	40490	01E9	8.Ic	*R/W
D0441	40441	01B8	6.Dc	*R/W	D0491	40491	01EA	8.Dc	*R/W
D0442	40442	01B9	6.Hc	*R/W	D0492	40492	01EB	8.Hc	*R/W
D0443	40443	01BA	6.DB	*R/W	D0493	40493	01EC	8.DB	*R/W
D0444	40444	01BB	6.RP	*R/W	D0494	40494	01ED	RDV	*R/W
D0445	40445	01BC	6.PO	*R/W	D0495	40495	01EE	8.PO	*R/W
D0446	40446	01BD	6.Oc	*R/W	D0496	40496	01EF	8.Oc	*R/W
D0447					D0497				
D0448					D0498				
D0449					D0499				
D0450					D0500				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

2.6.1 Data Area for PID Parameters

Register No.	Category	Description	Remarks
D0301 to D0321	Group-1 parameters	1.SP: Target setpoint 1.P: Proportional band 1.I: Integral time 1.D: Derivative time 1.OH: Upper limit of output 1.OL: Lower limit of output 1.MR: Manual reset 1.H: Hysteresis 1.DR: Direct/reverse action switchover 1.Pc: Cooling-side proportional band 1.Ic: Cooling-side integral time 1.Dc: Cooling-side derivative time 1.Hc: Cooling-side relay hysteresis 1.DB: Deadband 1.RP: Zone PID reference point 1.PO: Preset output value 1.Oc: Cooling-side preset output value	Selecting an SP number by means of communication enables a parameter group with the same number to be used. For example, if you set the SP number selection parameter (SPNO) to 5, the parameters from 5.SP through 5.Oc are used. For details on the parameters, see the User s Manual of UT450/UT420.
D0326 to D0346	Group-2 parameters	The parameters from 2.SP to 2.Oc are functionally the same as their corresponding group-1 parameters.	
D0351 to D0371	Group-3 parameters	The parameters from 3.SP to 3.Oc are functionally the same as their corresponding group-1 parameters.	
D0376 to D0396	Group-4 parameters	The parameters from 4.SP to 4.Oc are functionally the same as their corresponding group-1 parameters.	
D0401 to D0421	Group-5 parameters	The parameters from 5.SP to 5.Oc are functionally the same as their corresponding group-1 parameters.	
D0426 to D0446	Group-6 parameters	The parameters from 6.SP to 6.Oc are functionally the same as their corresponding group-1 parameters.	
D0451 to D0471	Group-7 parameters	The parameters from 7.SP to 7.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RHY, which corresponds to 1.RP, denotes the zone PID hysteresis.	
D0476 to D0496	Group-8 parameters	The parameters from 8.SP to 8.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RDV, which corresponds to 1.RP, denotes the zone PID reference deviation.	

2.7 Control Action, Common Function, and SELECT Display Registration Parameters

Area for Control Action Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0901	40901	0384	RMS	*R/W	D0951				
D0902	40902	0385	SPT	*R/W	D0952				
D0903	40903	0386	PVT	*R/W	D0953				
D0904	40904	0387	TMU	*R/W	D0954				
D0905					D0955				
D0906					D0956				
D0907					D0957				
D0908					D0958				
D0909					D0959				
D0910					D0960				
D0911					D0961				
D0912					D0962				
D0913					D0963				
D0914					D0964				
D0915	40915	0392	AL1	*R/W	D0965				
D0916	40916	0393	AL2	*R/W	D0966				
D0917	40917	0394	AL3	*R/W	D0967				
D0918	40918	0395	AL4	*R/W	D0968				
D0919	40919	0396	HY1	*R/W	D0969				
D0920	40920	0397	HY2	*R/W	D0970				
D0921	40921	0398	HY3	*R/W	D0971				
D0922	40922	0399	HY4	*R/W	D0972				
D0923	40923	039A	AMD	*R/W	D0973				
D0924					D0974				
D0925					D0975				
D0926	40926	039D	OPR	*R/W	D0976				
D0927	40927	039E	MOD	*R/W	D0977				
D0928	40928	039F	AR	*R/W	D0978				
D0929	40929	03A0	ZON	*R/W	D0979				
D0930	40930	03A1	R.MD	*R/W	D0980				
D0931	40931	03A2	R.TM	*R/W	D0981				
D0932	40932	03A3	DIS	*R/W	D0982				
D0933	40933	03A4	SPH	*R/W	D0983				
D0934	40934	03A5	SPL	*R/W	D0984				
D0935	40935	03A6	DY1	*R/W	D0985				
D0936	40936	03A7	DY2	*R/W	D0986				
D0937	40937	03A8	DY3	*R/W	D0987				
D0938	40938	03A9	DY4	*R/W	D0988				
D0939					D0989				
D0940	40940	03AB	GRP	*R/W	D0990				
D0941					D0991				
D0942					D0992				
D0943					D0993				
D0944					D0994				
D0945					D0995				
D0946					D0996				
D0947					D0997				
D0948					D0998				
D0949					D0999				
D0950					D1000				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

Area for Common Function Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1001					D1051				
D1002					D1052				
D1003					D1053				
D1004					D1054				
D1005					D1055				
D1006					D1056				
D1007					D1057				
D1008					D1058				
D1009					D1059				
D1010					D1060				
D1011					D1061				
D1012					D1062				
D1013	41013	03F4	RET	*R/W	D1063				
D1014	41014	03F5	RTH	*R/W	D1064				
D1015	41015	03F6	RTL	*R/W	D1065				
D1016					D1066				
D1017					D1067				
D1018					D1068				
D1019	41019	03FA	DVB	*R/W	D1069				
D1020					D1070				
D1021					D1071				
D1022					D1072				
D1023					D1073				
D1024	41024	03FF	▲▼	*R/W	D1074				
D1025	41025	0400	A/M	*R/W	D1075				
D1026					D1076				
D1027					D1077				
D1028	41028	0403	R/L	*R/W	D1078				
D1029					D1079				
D1030					D1080				
D1031					D1081				
D1032	41032	0407	PID	*R/W	D1082				
D1033					D1083				
D1034					D1084				
D1035					D1085				
D1036					D1086				
D1037					D1087				
D1038					D1088				
D1039					D1089				
D1040					D1090				
D1041					D1091				
D1042					D1092				
D1043					D1093				
D1044					D1094				
D1045					D1095				
D1046					D1096				
D1047					D1097				
D1048					D1098				
D1049					D1099				
D1050					D1100				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

Area for SELECT Display Registration Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1101	41101	044C	C.S1	*R/W	D1151				
D1102	41102	044D	C.S2	*R/W	D1152				
D1103	41103	044E	C.S3	*R/W	D1153				
D1104	41104	044F	C.S4	*R/W	D1154				
D1105	41105	0450	C.S5	*R/W	D1155				
D1106					D1156				
D1107					D1157				
D1108					D1158				
D1109					D1159				
D1110					D1160				
D1111					D1161				
D1112					D1162				
D1113					D1163				
D1114					D1164				
D1115					D1165				
D1116					D1166				
D1117					D1167				
D1118					D1168				
D1119					D1169				
D1120					D1170				
D1121					D1171				
D1122					D1172				
D1123					D1173				
D1124					D1174				
D1125					D1175				
D1126					D1176				
D1127					D1177				
D1128					D1178				
D1129					D1179				
D1130					D1180				
D1131					D1181				
D1132					D1182				
D1133					D1183				
D1134					D1184				
D1135					D1185				
D1136					D1186				
D1137					D1187				
D1138					D1188				
D1139					D1189				
D1140					D1190				
D1141					D1191				
D1142					D1192				
D1143					D1193				
D1144					D1194				
D1145					D1195				
D1146					D1196				
D1147					D1197				
D1148					D1198				
D1149					D1199				
D1150					D1200				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

2.7.1 Data Area for Control Action Parameters

Register No.	Category	Description	Remarks
D0901 to D0904 D0933, D0934	SP-related parameters	RMS to TMU SPH, SPL	For details on the parameters, see the User's Manual of UT450/UT420.
D0915 to D0923 D0935 to D0938	Alarm setting parameters	AL1 to AMD DY1 to DY4	
D0926 to D0931 D0940	Control function setting parameters	OPR to R.TM GRP	
D0932	DI selection parameter	DIS	Setting: 0, 1, 2, 3, or 4

2.7.2 Data Area for Common Function Parameters

Register No.	Category	Description	Remarks
D1013 to D1015	Retransmission output setting parameters	RET to RTL	For details on the parameters, see the User's Manual of UT450/UT420.
D1019	Deviation trend setting parameter	DVB	
D1024 to D1032	Lock setting parameters	▲▼ to PID	

2.7.3 Data Area for SELECT Display Registration Parameters

Register No.	Category	Description	Remarks
D1101 to D1105	SELECT display registration parameters	C.S1 to C.S5	For details on the parameters, see the User's Manual of UT450/UT420.

2.8 PV Input, Control Output, and Communication Parameters

Area for PV Input, Control Output, and Communication Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1201	41201	04B0	IN	*R/W	D1251	41251	04E2	DLN	*R/W
D1202	41202	04B1	UNI	*R/W	D1252	41252	04E3	ADR	*R/W
D1203					D1253	41253	04E4	RP.T	*R/W
D1204	41204	04B3	RH	*R/W	D1254				
D1205	41205	04B4	RL	*R/W	D1255				
D1206	41206	04B5	SDP	R	D1256				
D1207	41207	04B6	SH	*R/W	D1257				
D1208	41208	04B7	SL	*R/W	D1258				
D1209	41209	04B8	BSL	*R/W	D1259				
D1210	41210	04B9	RJC	*R/W	D1260				
D1211					D1261	41261	04EC	V.RS	*R/W
D1212					D1262	41262	04ED	V.L	*R/W
D1213					D1263	41263	04EE	V.H	*R/W
D1214					D1264	41264	04EF	TR.T	*R/W
D1215					D1265	41265	04F0	V.MOD	*R/W
D1216					D1266	41266	04F1	INI	*R/W
D1217					D1267	41267	04F2	V.AT	*R/W
D1218					D1268				
D1219					D1269				
D1220					D1270				
D1221	41221	04C4	RSP	*R/W	D1271				
D1222					D1272				
D1223					D1273				
D1224					D1274	41274	04F9	DPC	*R/W
D1225					D1275				
D1226					D1276				
D1227	41227	04CA	RSH	*R/W	D1277				
D1228	41228	04CB	RSL	*R/W	D1278				
D1229					D1279				
D1230					D1280				
D1231					D1281				
D1232					D1282				
D1233					D1283				
D1234					D1284				
D1235					D1285				
D1236					D1286				
D1237					D1287				
D1238	41238	04D5	OT	*R/W	D1288				
D1239					D1289				
D1240	41240	04D7	CT	*R/W	D1290				
D1241					D1291				
D1242	41242	04D9	CTc	*R/W	D1292				
D1243					D1293				
D1244					D1294				
D1245					D1295				
D1246					D1296				
D1247	41247	04DE	PSL	*R/W	D1297				
D1248	41248	04DF	BPS	*R/W	D1298				
D1249	41249	04E0	PRI	*R/W	D1299				
D1250	41250	04E1	STP	*R/W	D1300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

2.8.1 Data Area for PV Input, Control Output, and Communication Parameters

Register No.	Category	Description	Remarks
D1201 to D1210	PV input parameters	IN to RJC	DP (D register number 1203) is not a parameter, and this register is read-only. For details on the parameters, see the User s Manual of UT450/UT420.
D1221 to D1228	Remote input parameters	RSP to RSL	For details on the parameters, see the User s Manual of UT450/UT420.
D1238 to D1242	Control output parameters	OT to CTc	
D1247 to D1253	RS-485 communication parameters	RSL to RP.T	
D1261 to D1265	Valve calibration parameters	V.RS to V.MOD	
D1266	Parameter initialization	INIT	
D1267	Automatic valve adjustment	V.AT	
D1274	Decimal places cut-off parameter	DPC	

3. Functions and Use of D Registers (UT350/UT320,UT351/UT321)

3.1 Overview

This section explains the functions and use of D registers.

D registers store parameter data, flag data and process data of the GREEN Series controller. You can readily use these internal data items by reading from or writing to the D registers.

You can use D registers to perform:

- **Centralized control using a higher-level device**
- **Data exchange by reading/writing data from/to a higher-level device**

3.2 Interpretation of D Register Tables

This section explains how to read the D Register Map tables in this chapter. The numbers listed in the leftmost column are D register numbers ((1) below). The five-digit numbers in the next column are reference numbers used for MODBUS communication ((2) below). The numbers in the column third from left are register numbers in hexadecimal notation used in MODBUS communication programs ((3) below). Each register code name in the D Register Map tables represents a specific process data item, operation parameter, setup parameter or other data items such as a flag. For details on the operation parameters and setup parameters, see the user's manual of UT350/UT320, UT351/UT321.

Name of D Register Map				
D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R

(1) D register number

(2) Reference number (for MODBUS communication)

(3) Hex number (for MODBUS communication program)

Permission of read/write by communication

An asterisk (*) in this column indicates that the number of writing actions is limited to 100,000.

■ Names of D Registers

The base names of some D registers are preceded by a combination of a number and then a period as shown in the format Y.□□□. (Y: group number)

Examples:

- The name 3.SP means the SP of group 3.

3.3 Classification of D Registers

■ Classification of D Register Map Tables

The table below outlines how the D registers are classified by their numbers in the D Register Map tables.

Table 3.1 Classification of D Registers

Register No.	Area and data categories		Description	Reference
D0001 to D0049	Process data area (Note 1)	Data displayed for operation	PV, SP, OUT, and others	Section 3.4
D0050 to D0100	User area (Note 2), represented by shaded cells in the table	—	If a graphic panel is used, this area is used for communication with the graphic panel.	Section 3.4
D0101 to D0200	Cannot be used.			
D0201 to D0230	Operation parameters (Note 1)	Operation mode parameters	A/M, MOUT, and others	Section 3.5
D0231 to D0300		Computation parameters	AT, SC, BS, FL, and others	Section 3.5
D0301 to D0500		PID parameters	P, I, D, and others	Section 3.6
D0501 to D0900	Cannot be used			
D0901 to D1200	Setup parameters (Note 1)	Control action parameters	TMU, ALM, C.MD	Section 3.7
D1001 to D1100		Common function parameters	RET, LOC	Section 3.7
D1101 to D1200		SELECT display registration parameters	CS	Section 3.7
D1201 to D1300		PV input, control output, and communication parameters	IN, OUT, PSL	Section 3.8

Note 1: Data for process values, operation parameters and setup parameters are stored in the types (PV input range, PV input range span, %, or ABS without the decimal point) indicated in the Operation Parameter Lists and Setup Parameter Lists of the user s manual of UT350/UT320,UT351/UT321. The OFF and ON states are represented by 0 and 1, respectively. D registers D0001 to D0049 are read-only.

Note 2: When communicating with a graphic panel, do not write to or read from this area (D0050 to D0100) because this area is reserved for 16-bit register data used by graphic panels.

[See Also] Section 3.4, Process Data and User Area.

NOTE

It is prohibited to read/write data by communication from/to the registers of blank cells in the register map tables. If you attempt to do so, the UT350/UT320,UT351/UT321 may not operate properly.

3.4 Process Data and User Area

Area for Process Data									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R	D0051	40051	0032		R/W
D0002	40002	0001	ERROR	R	D0052	40052	0033		R/W
D0003	40003	0002	PV	R	D0053	40053	0034		R/W
D0004	40004	0003	CSP	R	D0054	40054	0035		R/W
D0005	40005	0004	OUT	R	D0055	40055	0036		R/W
D0006	40006	0005	HOUT	R	D0056	40056	0037		R/W
D0007	40007	0006	COUT	R	D0057	40057	0038		R/W
D0008	40008	0007	MOD	R	D0058	40058	0039		R/W
D0009	40009	0008	PIDNO	R	D0059	40059	003A		R/W
D0010	40010	0009	CSPNO	R	D0060	40060	003B		R/W
D0011	40011	000A	ALM	R	D0061	40061	003C		R/W
D0012					D0062	40062	003D		R/W
D0013					D0063	40063	003E		R/W
D0014					D0064	40064	003F		R/W
D0015					D0065	40065	0040		R/W
D0016					D0066	40066	0041		R/W
D0017					D0067	40067	0042		R/W
D0018					D0068	40068	0043		R/W
D0019					D0069	40069	0044		R/W
D0020					D0070	40070	0045		R/W
D0021					D0071	40071	0046		R/W
D0022					D0072	40072	0047		R/W
D0023					D0073	40073	0048		R/W
D0024					D0074	40074	0049		R/W
D0025					D0075	40075	004A		R/W
D0026					D0076	40076	004B		R/W
D0027	40027	001A	OR	R	D0077	40077	004C		R/W
D0028	40028	001B	HC1	R	D0078	40078	004D		R/W
D0029	40029	001C	HC2	R	D0079	40079	004E		R/W
D0030					D0080	40080	004F		R/W
D0031					D0081	40081	0050		R/W
D0032					D0082	40082	0051		R/W
D0033					D0083	40083	0052		R/W
D0034					D0084	40084	0053		R/W
D0035	40035	0022	PARAERR	R	D0085	40085	0054		R/W
D0036					D0086	40086	0055		R/W
D0037					D0087	40087	0056		R/W
D0038					D0088	40088	0057		R/W
D0039					D0089	40089	0058		R/W
D0040					D0090	40090	0059		R/W
D0041					D0091	40091	005A		R/W
D0042					D0092	40092	005B		R/W
D0043					D0093	40093	005C		R/W
D0044					D0094	40094	005D		R/W
D0045					D0095	40095	005E		R/W
D0046					D0096	40096	005F		R/W
D0047					D0097	40097	0060		R/W
D0048					D0098	40098	0061		R/W
D0049					D0099	40099	0062		R/W
D0050	40050	0031		R/W	D0100	40100	0063		R/W

Shaded area : User area (You cannot use these registers when a graphic panel is used.)

3.4.1 Process Data Area (Read-only)

Some of the registers in this area (D0001 to D0049, read-only) are designed to represent two or more events, such as errors and statuses, using combinations of bits within the register. If any of the events shown in the following tables occur, the corresponding bit is set to 1. The bit remains 0 if the event does not occur. Note that bits with blank fields in the tables are not in use.

● Bit Configuration of D0001: ADERROR (Input Error)

Bit	Code	Event
0	ADERR.st	Input A/D converter error
1 to 15		

● Bit Configuration of D0002: ERROR (PV Error)

Bit	Code	Event
0		
1	PVBO.st	PV burnout error
2	RJCERR.st	PV RJC error
3		
4	PV+over.st	PV over-scale
5	PV-over.st	PV under-scale
6 to 13		
14	ATERR.st	Auto-tuning error
15		

● D0003: PV (Measured input value)

● D0004: CSP (Current target setpoint [SP])

● D0005: OUT (Control output value [OUT])

- During PID computation, you can read the computation result as is from this register. For example, when the computation result is 75.0%, the register contains a value of “750.”
- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains the value of PID computation result.

● D0006: HOUT (Heating-side control output in Heating/Cooling Control)

- During heating/cooling computation, this register contains the heating-side control output value.

● D0007: COUT (Cooling-side control output in Heating/Cooling Control)

- During heating/cooling computation, this register contains the cooling-side control output value.

● Bit Configuration of D0008: MOD (Operation mode)

Bit	Code	Event
0	A/M.st	0: AUTO; 1: MAN
1		
2	S/R.st	0: RUN; 1: STOP
3 to 13		
14	AT.st	0: Auto-tuning is OFF; 1: Auto-tuning is ON
15		

● D0009: PIDNO (Current PID number)

Bit	Code	Event
0	PIDNO.0	Bit 0 of the current PID number
1	PIDNO.1	Bit 1 of the current PID number
2	PIDNO.2	Bit 2 of the current PID number
3	PIDNO.3	Bit 3 of the current PID number
4 to 15		

From this register, you can read the PID number currently in use in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = off”, which is represented as “0100” in binary notation and as “4” in decimal notation, indicates that the PID number currently being used is 4.

● D0010: CSPNO (Current target-setpoint number)

Bit	Code	Event
0	CSPNO1.0	Bit 0 of CSP (current SP number)
1	CSPNO1.1	Bit 1 of CSP (current SP number)
2	CSPNO1.2	Bit 2 of CSP (current SP number)
3	CSPNO1.3	Bit 3 of CSP (current SP number)
4 to 15		

From this register, you can read the SP number of the currently used target setpoint in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = off”, which is represented as “0100” in binary notation and as “4” in decimal notation, indicates that the target setpoint value of 4.SP is now being used.

● Bit Configuration of D0011: ALM (Alarm Status)

Bit	Code	Event
0	ALM1.st	‘1’ when alarm 1 is ON; ‘0’ when OFF
1	ALM2.st	‘1’ when alarm 2 is ON; ‘0’ when OFF
2	ALM3.st	‘1’ when alarm 3 is ON; ‘0’ when OFF
3 to 15		

[See Also] User’s Manual of UT350/UT320,UT351/UT321

● Bit Configuration of D0027:OR (Moving average of sensor grounding alarm)

● Bit Configuration of D0028:HC1 (Heater burnout current measurement 1)

● Bit Configuration of D0029:HC2 (Heater burnout current measurement 2)

● Bit Configuration of D0035: PARAERR (Error in calibration values and parameters)

Bit	Code	Event
0	CALB.E.st	Calibration value error
1 to 5		
6	SETUP.st	Setup parameter error
7		
8	PARA.E.st	Operating parameter error
9	MODE.E.st	Error in power-failure backup data
12	EEP.E.st	EEPROM error
13		
14	SYSTEM.E.st	System data error
10, 11, 15		

3.4.2 User Area

Register No.	Category	Description
D0050 to D0100	User area	Users can read/write data from/to the registers in this area. However, if a touch operation panel is used in the system, users cannot use this area.

3.5 Operation Mode and Computation Parameters

Area for Operation Mode and Computation Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0201	40201	00C8	A/M	*R/W	D0251	40251	00FA	ORH	*R/W
D0202					D0252	40252	00FB	ORL	*R/W
D0203					D0253				
D0204					D0254	40254	00FD	OH	*R/W
D0205	40205	00CC	S/R	*R/W	D0255	40255	00FE	OL	*R/W
D0206					D0256	40256	00FF	HYS	*R/W
D0207	40207	00CE	SPNO (NOTE 1)	*R/W	D0257	40257	0100	DR	*R/W
D0208					D0258	40258	0101	HB1	*R/W
D0209					D0259	40259	0102	HB2	*R/W
D0210					D0260				
D0211					D0261				
D0212					D0262				
D0213					D0263				
D0214					D0264				
D0215	40215	00D6	C.RSP	R/W	D0265				
D0216					D0266				
D0217	40217	00D8	MOUT	R/W	D0267				
D0218	40218	00D9	MOUTc	R/W	D0268				
D0219					D0269				
D0220					D0270				
D0221					D0271				
D0222					D0272				
D0223					D0273				
D0224					D0274				
D0225					D0275				
D0226					D0276				
D0227					D0277				
D0228					D0278				
D0229					D0279				
D0230					D0280				
D0231	40231	00E6	A1	*R/W	D0281				
D0232	40232	00E7	A2	*R/W	D0282				
D0233	40233	00E8	A3	*R/W	D0283				
D0234					D0284				
D0235					D0285				
D0236					D0286				
D0237	40237	00EC	PCCH (NOTE 2)	*R/W	D0287				
D0238	40238	00ED	PCCL (NOTE 2)	*R/W	D0288				
D0239					D0289				
D0240					D0290				
D0241	40241	00F0	AT	*R/W	D0291				
D0242	40242	00F1	SC	*R/W	D0292				
D0243	40243	00F2	BS	*R/W	D0293				
D0244	40244	00F3	FL	*R/W	D0294				
D0245	40245	00F4	UPR	*R/W	D0295				
D0246	40246	00F5	DNR	*R/W	D0296				
D0247					D0297				
D0248					D0298				
D0249					D0299				
D0250	40250	00F9	ORB	*R/W	D0300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

NOTE 1 : If you change the SP number (SPNO), set the setup parameter DIS to "OFF (0)" or "2."

NOTE 2 : Parameters PCCH and PCCL are used for UT351/UT321 only.

3.5.1 Operation Mode Information

The mode registers listed below are designed to show, by the value contained, which mode is selected.

You can change the mode by writing a different mode to the register via communication.

● D0201: A/M (AUTO/MAN modes)

When D0201 = 0, the controller is in the AUTO (automatic) mode.

When D0201 = 1, the controller is in the MAN (manual) mode.

● D0205: S/R (STOP/RUN modes)

When D0205 = 0, the controller is in the RUN mode.

When D0205 = 1, the controller is in the STOP mode.

When the setup parameter DIS≠4, writing via communication is possible.

The status of external contact input is held at power off.

When the setup parameter DIS=4, writing via communication is impossible.

The status of external contact input is not held at power off. (Depending on external contact input at power on.)

3.5.2 Write-only Data Area

The registers listed below are write-only registers that are accessed by a higher-level device.

For example, to set 150.0˚C in the C.RSP register, write 1500 in the register.

D Register No.	Code	Description
D0215	C.RSP	Used to set SP.
D0217	MOUT	Used to set control output value or heating-side control output value in the MAN mode.
D0218	MOUTc	Used to set cooling-side control output value in the MAN mode.

■ Writing an SP Value

An SP value can be written via communication only when the operating parameter SP.NO (SP number selection) is set to “0.”

(1) Write the SP value into the C.RSP register.

(2) Set the SP number selection parameter SP.NO to “0.”

In this way, you can operate the controller to set SP values via communication.

■ Writing a Control Output Value in MAN Mode

You can write a control output value via communication only when the controller is in MAN mode.

(1) Set the controller to MAN mode.

(2) Write the control output value to MOUT or MOUTc register.

In this way, you can operate the controller in MAN mode to set control output values via communication.

3.5.3 Data Area for Computation Parameters

Register No.	Category	Description	Remarks
D0231 to D0233	Alarm setpoint parameters	A1 to A3: Alarm setpoints for alarm 1 to 3	For details on the parameters, see the User's Manual of UT350/UT320, UT351/UT321. Parameters PCCH and PCCL are used for UT351/UT321 only.
D0237, D0238	PV color change parameters	PCCH: High limit for PV color change PCCL: Low limit for PV color change	
D0241 to D0252	Computation parameters	AT: Auto-tuning selection SC: SUPER function selection BS: PV bias FL: PV filter UPR: Setpoint ramp-up rate DNR: Setpoint ramp-down rate ORB: ON/OFF rate detection band ORH: ON/OFF rate high-limit ORL: ON/OFF rate low-limit	

3.6 PID Parameters

Area for PID Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0301	40301	012C	1.SP	*R/W	D0351	40351	015E	3.SP	*R/W
D0302					D0352				
D0303					D0353				
D0304					D0354				
D0305					D0355				
D0306	40306	0131	1.P	*R/W	D0356	40356	0163	3.P	*R/W
D0307	40307	0132	1.I	*R/W	D0357	40357	0164	3.I	*R/W
D0308	40308	0133	1.D	*R/W	D0358	40358	0165	3.D	*R/W
D0309					D0359				
D0310					D0360				
D0311	40311	0136	1.MR	*R/W	D0361	40361	0168	3.MR	*R/W
D0312					D0362				
D0313					D0363				
D0314	40314	0139	1.Pc	*R/W	D0364	40364	016B	3.Pc	*R/W
D0315	40315	013A	1.Ic	*R/W	D0365	40365	016C	3.Ic	*R/W
D0316	40316	013B	1.Dc	*R/W	D0366	40366	016D	3.Dc	*R/W
D0317					D0367				
D0318	40318	013D	1.DB	*R/W	D0368	40368	016F	3.DB	*R/W
D0319	40319	013E	1.RP	*R/W	D0369				
D0320					D0370				
D0321					D0371				
D0322					D0372				
D0323					D0373				
D0324					D0374				
D0325					D0375				
D0326	40326	0145	2.SP	*R/W	D0376	40376	0177	4.SP	*R/W
D0327					D0377				
D0328					D0378				
D0329					D0379				
D0330					D0380				
D0331	40331	014A	2.P	*R/W	D0381	40381	017C	4.P	*R/W
D0332	40332	014B	2.I	*R/W	D0382	40382	017D	4.I	*R/W
D0333	40333	014C	2.D	*R/W	D0383	40383	017E	4.D	*R/W
D0334					D0384				
D0335					D0385				
D0336	40336	014F	2.MR	*R/W	D0386	40386	0181	4.MR	*R/W
D0337					D0387				
D0338					D0388				
D0339	40339	0152	2.Pc	*R/W	D0389	40389	0184	4.Pc	*R/W
D0340	40340	0153	2.Ic	*R/W	D0390	40390	0185	4.Ic	*R/W
D0341	40341	0154	2.Dc	*R/W	D0391	40391	0186	4.Dc	*R/W
D0342					D0392				
D0343	40343	0156	2.DB	*R/W	D0393	40393	0188	4.DB	*R/W
D0344	40344	0157	2.RP	*R/W					
D0345									
D0346									
D0347									
D0348									
D0349									
D0350					D0494	40494	01ED	RDV	*R/W

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

3.6.1 Data Area for PID Parameters

Register No.	Category	Description	Remarks
D0301 to D0319	Group-1 parameters	1.SP: Target setpoint 1.P: Proportional band 1.I: Integral time 1.D: Derivative time 1.MR: Manual reset 1.Pc: Cooling-side proportional band 1.Ic: Cooling-side integral time 1.Dc: Cooling-side derivative time 1.DB: Deadband 1.RP: Zone PID reference point	Selecting an SP number by means of communication enables a parameter group with the same number to be used. For example, if you set the SP number selection parameter (SPNO) to 2, the parameters from 2.SP through 2.RP are used. For details on the parameters, see the User's Manual of UT350/UT320, UT351/UT321.
D0326 to D0344	Group-2 parameters	The parameters from 2.SP to 2.RP are functionally the same as their corresponding group-1 parameters.	
D0351 to D0369	Group-3 parameters	The parameters from 3.SP to 3.DB are functionally the same as their corresponding group-1 parameters.	
D0376 to D0393	Group-4 parameters	The parameters from 4.SP to 4.DB are functionally the same as their corresponding group-1 parameters.	
D0494	PID switching parameter	RDV: zone PID reference deviation.	

3.7 Control Action, Common Function, and SELECT Display Registration Parameters

Area for Control Action Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0901					D0951				
D0902					D0952				
D0903					D0953				
D0904	40904	0387	TMU	*R/W	D0954				
D0905					D0955				
D0906					D0956				
D0907					D0957				
D0908					D0958				
D0909					D0959				
D0910					D0960				
D0911					D0961				
D0912					D0962				
D0913					D0963				
D0914					D0964				
D0915	40915	0392	AL1	*R/W	D0965				
D0916	40916	0393	AL2	*R/W	D0966				
D0917	40917	0394	AL3	*R/W	D0967				
D0918					D0968				
D0919	40919	0396	HY1	*R/W	D0969				
D0920	40920	0397	HY2	*R/W	D0970				
D0921	40921	0398	HY3	*R/W	D0971				
D0922					D0972				
D0923					D0973				
D0924	40924	039B	PO	*R/W	D0974				
D0925	40925	039C	POc	*R/W	D0975				
D0926					D0976				
D0927	40927	039E	C.MD	*R/W	D0977				
D0928	40928	039F	AR	*R/W	D0978				
D0929	40929	03A0	ZON	*R/W	D0979				
D0930					D0980				
D0931					D0981				
D0932	40932	03A3	DIS	*R/W	D0982				
D0933	40933	03A4	SPH	*R/W	D0983				
D0934	40934	03A5	SPL	*R/W	D0984				
D0935	40935	03A6	DY1	*R/W	D0985				
D0936	40936	03A7	DY2	*R/W	D0986				
D0937	40937	03A8	DY3	*R/W	D0987				
D0938					D0988				
D0939					D0989				
D0940					D0990				
D0941					D0991				
D0942					D0992				
D0943					D0993				
D0944					D0994				
D0945					D0995				
D0946					D0996				
D0947					D0997				
D0948					D0998				
D0949					D0999				
D0950					D1000				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

Area for Common Function Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1001					D1051				
D1002					D1052				
D1003					D1053				
D1004					D1054				
D1005					D1055				
D1006					D1056				
D1007					D1057				
D1008					D1058				
D1009					D1059				
D1010					D1060				
D1011					D1061				
D1012					D1062				
D1013	41013	03F4	RET	*R/W	D1063				
D1014	41014	03F5	RTH	*R/W	D1064				
D1015	41015	03F6	RTL	*R/W	D1065				
D1016					D1066				
D1017					D1067				
D1018					D1068				
D1019					D1069				
D1020					D1070				
D1021					D1071				
D1022					D1072				
D1023					D1073				
D1024					D1074				
D1025					D1075				
D1026					D1076				
D1027					D1077				
D1028					D1078				
D1029					D1079				
D1030					D1080				
D1031					D1081				
D1032					D1082				
D1033					D1083				
D1034					D1084				
D1035					D1085				
D1036	41036	040B	LOCK	R	D1086				
D1037	41037	040C	PCMD (NOTE)	*R/W	D1087				
D1038	41038	040D	ERJC (NOTE)	*R/W	D1088				
D1039					D1089				
D1040					D1090				
D1041					D1091				
D1042					D1092				
D1043					D1093				
D1044					D1094				
D1045					D1095				
D1046					D1096				
D1047					D1097				
D1048					D1098				
D1049					D1099				
D1050					D1100				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.
NOTE: Parameters PCMD and ERJC are used for UT351/UT321 only.

Area for SELECT Display Registration Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1101	41101	044C	C.S1	*R/W	D1151				
D1102	41102	044D	C.S2	*R/W	D1152				
D1103	41103	044E	C.S3	*R/W	D1153				
D1104	41104	044F	C.S4	*R/W	D1154				
D1105					D1155				
D1106					D1156				
D1107					D1157				
D1108					D1158				
D1109					D1159				
D1110					D1160				
D1111					D1161				
D1112					D1162				
D1113					D1163				
D1114					D1164				
D1115					D1165				
D1116					D1166				
D1117					D1167				
D1118					D1168				
D1119					D1169				
D1120					D1170				
D1121					D1171				
D1122					D1172				
D1123					D1173				
D1124					D1174				
D1125					D1175				
D1126					D1176				
D1127					D1177				
D1128					D1178				
D1129					D1179				
D1130					D1180				
D1131					D1181				
D1132					D1182				
D1133					D1183				
D1134					D1184				
D1135					D1185				
D1136					D1186				
D1137					D1187				
D1138					D1188				
D1139					D1189				
D1140					D1190				
D1141					D1191				
D1142					D1192				
D1143					D1193				
D1144					D1194				
D1145					D1195				
D1146					D1196				
D1147					D1197				
D1148					D1198				
D1149					D1199				
D1150					D1200				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

3.7.1 Data Area for Control Action Parameters

Register No.	Category	Description	Remarks
D0904	Time unit for ramp-rate setting	TMU	
D0915 to D0917	Alarm setting parameters	AL1 to AL3	For alarm types, see the User's Manual of UT350/UT320, UT351/UT321.
D0919 to D0921	Alarm hysteresis	HY1 to HY3	0.0 to 100.0% of PV input range span
D0924 to D0932	Control function setting parameters	PO to DIS	For details on the parameters, see the User's Manual of UT350/UT320, UT351/UT321.
D0933, D0934	Upper and lower limits of target setpoint	SPH, SPL	
D0935 to D0937	Alarm-ON delay time	DY1 to DY3	

3.7.2 Data Area for Common Function Parameters

Register No.	Category	Description	Remarks
D1013 to D1015	Retransmission output setting parameters	RET to RTL	For details on the parameters, see the User's Manual of UT350/UT320, UT351/UT321. Parameters PCMD and ERJC are used for UT351/UT321 only.
D1036	Menu-lock setting parameters	LOCK	
D1037	PV color mode	PCMD	
D1038	External RJC setpoint	ERJC	

3.7.3 Data Area for SELECT Display Registration Parameters

Register No.	Category	Description	Remarks
D1101 to D1104	SELECT display registration parameters	C.S1 to C.S4	For details on the parameters, see the User's Manual of UT350/UT320, UT351/UT321.

3.8 PV Input, Control Output, and Communication Parameters

Area for PV Input, Control Output, and Communication Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1201	41201	04B0	IN	*R/W	D1251	41251	04E2	DLN	R
D1202	41202	04B1	UNI	*R/W	D1252	41252	04E3	ADR	R
D1203					D1253	41253	04E4	RP.T	R
D1204	41204	04B3	RH	*R/W	D1254				
D1205	41205	04B4	RL	*R/W	D1255				
D1206	41206	04B5	SDP	*R/W	D1256				
D1207	41207	04B6	SH	*R/W	D1257				
D1208	41208	04B7	SL	*R/W	D1258				
D1209	41209	04B8	BSL	*R/W	D1259				
D1210	41210	04B9	RJC	*R/W	D1260				
D1211					D1261				
D1212					D1262				
D1213					D1263				
D1214					D1264				
D1215					D1265				
D1216					D1266				
D1217					D1267				
D1218					D1268				
D1219					D1269				
D1220					D1270				
D1221					D1271				
D1222					D1272				
D1223					D1273				
D1224					D1274				
D1225					D1275				
D1226					D1276				
D1227					D1277				
D1228					D1278				
D1229					D1279				
D1230					D1280				
D1231					D1281				
D1232					D1282				
D1233					D1283				
D1234					D1284				
D1235					D1285				
D1236					D1286				
D1237					D1287				
D1238	41238	04D5	OT	*R/W	D1288				
D1239					D1289				
D1240	41240	04D7	CT	*R/W	D1290				
D1241					D1291				
D1242	41242	04D9	CTc	*R/W	D1292				
D1243					D1293				
D1244					D1294				
D1245					D1295				
D1246					D1296				
D1247	41247	04DE	PSL	R	D1297				
D1248	41248	04DF	BPS	R	D1298				
D1249	41249	04E0	PRI	R	D1299				
D1250	41250	04E1	STP	R	D1300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

3.8.1 Data Area for PV Input, Control Output, and Communication Parameters

Register No.	Category	Description	Remarks
D1201 to D1210	PV input parameters	IN to RJC	For details on the parameters, see the User's Manual of UT350/UT320/UT351/UT321.
D1238 to D1242	Control output parameters	OT to CTc	For details on the parameters, see the User's Manual of UT350/UT320/UT351/UT321.
D1247 to D1253	RS-485 communication parameters	PSL to RP.T	See the manual GREEN Series Communication Functions.

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4. Functions and Use of D Registers (UP750/UP550)

4.1 Overview

This section explains the functions and use of D registers.

D registers store parameter data, flag data and process data of the GREEN Series controller. You can readily use these internal data items by reading from or writing to the D registers.

You can use D registers to perform:

- **Centralized control using a higher-level device**
- **Data exchange by reading/writing data from/to a higher-level device**

4.2 Interpretation of D Register Tables

This section explains how to read the D Register Map tables in this chapter. The numbers listed in the leftmost column are D register numbers ((1) below). The five-digit numbers in the next column are reference numbers used for MODBUS communication ((2) below). The numbers in the column third from left are register numbers in hexadecimal notation used in MODBUS communication programs ((3) below). Each register code name in the D Register Map tables represents a specific process data item, operation parameter, setup parameter or other data items such as a flag. For details on the operation parameters and setup parameters, see the user's manual of UP750/UP550.

Name of D Register Map				
D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R

(1) D register number

(2) Reference number (for MODBUS communication)

(3) Hex number (for MODBUS communication program)

Permission of read/write by communication

An asterisk (*) in this column indicates that the number of writing actions is limited to 100,000.

■ Names of D Registers

The base names of some D registers are preceded by a combination of a number and then a period, and/or followed by a combination of a period and then a number, as shown in the format Y.□□□.X. (Y: group number; X: loop number)

Examples:

- The name 3.P.1 means the P of group 3 and for Loop-1.
- The name OUT.2 means the OUT of Loop-2.

4.3 Classification of D Registers

■ Classification of D Register Map Tables

The table below outlines how the D registers are classified by their numbers in the D Register Map tables.

Table 4.1 Classification of D Registers

Register No.	Area and data categories		Description	Reference
D0001 to D0049	Process data area (Note 1)	Data displayed for operation	PV, SP, OUT, and others	Section 4.4
D0050 to D0100	User area (Note 2), represented by shaded cells in the table	—	If a graphic panel is used, this area is used for communication with the graphic panel.	Section 4.4
D0101 to D0200	Program area	Program setting parameters	Local setpoint, PID number, event setting, and others	Section 4.5
D0201 to D0230	Operation parameters (Note 1)	Operation mode parameters	A/M, LSP/CAS, MOUT, and others	Section 4.5
D0231 to D0300		Computation parameters for Loop-1 and -2	AT, SC, BS, FL, and others	Section 4.6
D0301 to D0700		PID parameters for Loop-1 and -2	P, I, D, and others	Sections 4.7 and 4.8
D0701 to D0800		Ten-segment linearizer parameters and USER parameters	1.A1 to 1.PMD and others	Section 4.9
D0801 to D0900	Display messages	Message texts	Display messages (each comprising up to 20 alphanumeric characters)	Section 4.9
D0901 to D1000	Setup parameters (Note 1)	Control action parameters for Loop-1 and -2	SP, ALM, CTL	Section 4.10
D1001 to D1100		Loop-common function parameters	AIN, RET, TRND, LOCK	Section 4.10
D1101 to D1200		Display and I/O configuration parameters	CSEL, DO, DI, C.PYS	Section 4.10
D1201 to D1300		Controller mode, PV input, and control output parameters	UPMD, IN, OUT, R485, INIT	Section 4.11
D1301 to D1500	User definitions (custom computation area)	Input block	Block input/output and module output	Sections 4.12 and 4.13
D1501 to D1700		Output block		

Note 1: Data for process values, operation parameters and setup parameters are stored in the types (PV input range, PV input range span, %, or ABS without the decimal point) indicated in the Operation Parameter Lists and Setup Parameter Lists of the user s manual of UP750/UP550. The OFF and ON states are represented by 0 and 1, respectively. D registers D0001 to D0049 are read-only.

Note 2: When communicating with a graphic panel, do not write to or read from this area (D0050 to D0100) because this area is reserved for 16-bit register data used by graphic panels.

[See Also] Section 4.4, Process Data and User Area.

NOTE

It is prohibited to read/write data by communication from/to the registers of blank cells in the register map tables. If you attempt to do so, the UP750/UP550 may not operate properly.

4.4 Process Data and User Area

Area for Process Data									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R	D0051	40051	0032		R/W
D0002	40002	0001	ERROR.1	R	D0052	40052	0033		R/W
D0003	40003	0002	PV.1	R	D0053	40053	0034		R/W
D0004	40004	0003	CSP.1	R	D0054	40054	0035		R/W
D0005	40005	0004	OUT.1	R	D0055	40055	0036		R/W
D0006	40006	0005	HOUT.1	R	D0056	40056	0037		R/W
D0007	40007	0006	COUT.1	R	D0057	40057	0038		R/W
D0008	40008	0007	MOD.1	R	D0058	40058	0039		R/W
D0009	40009	0008	PIDNO.1	R	D0059	40059	003A		R/W
D0010					D0060	40060	003B		R/W
D0011	40011	000A	ALM	R	D0061	40061	003C		R/W
D0012	40012	000B	PVEV	R	D0062	40062	003D		R/W
D0013	40013	000C	TMEV1	R	D0063	40063	003E		R/W
D0014	40014	000D	TMEV2	R	D0064	40064	003F		R/W
D0015	40015	000E	PTN	R	D0065	40065	0040		R/W
D0016	40016	000F	SEGNO	R	D0066	40066	0041		R/W
D0017	40017	0010	TIME	R	D0067	40067	0042		R/W
D0018	40018	0011	ERROR.2	R	D0068	40068	0043		R/W
D0019	40019	0012	PV.2	R	D0069	40069	0044		R/W
D0020	40020	0013	CSP.2	R	D0070	40070	0045		R/W
D0021	40021	0014	OUT.2	R	D0071	40071	0046		R/W
D0022	40022	0015	HOUT.2	R	D0072	40072	0047		R/W
D0023	40023	0016	COUT.2	R	D0073	40073	0048		R/W
D0024	40024	0017	MOD.2	R	D0074	40074	0049		R/W
D0025	40025	0018	PIDNO.2	R	D0075	40075	004A		R/W
D0026	40026	0019	DEV.1	R	D0076	40076	004B		R/W
D0027	40027	002A	OR.1	R	D0077	40077	004C		R/W
D0028					D0078	40078	004D		R/W
D0029					D0079	40079	004E		R/W
D0030	40030	001D	DEV.2	R	D0080	40080	004F		R/W
D0031	40031	001E	OR.2	R	D0081	40081	0050		R/W
D0032	40032	001F	SMEC	R	D0082	40082	0051		R/W
D0033	40033	0020	DISTS	R	D0083	40083	0052		R/W
D0034	40034	0021	RDISTS	R	D0084	40084	0053		R/W
D0035	40035	0022	PARAERR	R	D0085	40085	0054		R/W
D0036	40036	0023	ALOSTS	R	D0086	40086	0055		R/W
D0037					D0087	40087	0056		R/W
D0038					D0088	40088	0057		R/W
D0039	40039	0026	DISP1	R	D0089	40089	0058		R/W
D0040	40040	0027	DISP2	R	D0090	40090	0059		R/W
D0041	40041	0028	TIME	R	D0091	40091	005A		R/W
D0042	40042	0029	PTNO	R	D0092	40092	005B		R/W
D0043	40043	002A	SEGNO	R	D0093	40093	005C		R/W
D0044	40044	002B	SEGUSE	R	D0094	40094	005D		R/W
D0045	40045	002C	REM.RCY	R	D0095	40095	005E		R/W
D0046	40046	002D	ALL.RCY	R	D0096	40096	005F		R/W
D0047	40047	002E	RST	R	D0097	40097	0060		R/W
D0048	40048	002F	REN	R	D0098	40098	0061		R/W
D0049	40049	0030	PVEOSTS	R	D0099	40099	0062		R/W
D0050	40050	0031		R/W	D0100	40100	0063		R/W

Shaded area : User area (You cannot use these registers when a graphic panel is used.)

4.4.1 Process Data Area (Read-only)

Some of the registers in this area (D0001 to D0049, read-only) are designed to represent two or more events, such as errors and statuses, using combinations of bits within the register. If any of the events shown in the following tables occur, the corresponding bit is set to 1. The bit remains 0 if the event does not occur. Note that bits with blank fields in the tables are not in use.

● Bit Configuration of D0001: ADERROR (Input Error)

Bit	Code	Event
0	AD1ERR.st	Input-1 A/D converter error
1	AD2ERR.st	Input-2 A/D converter error (UP750 only)
2	AD3ERR.st	Input-3 A/D converter error
3		
4	AD1BO.st	Input-1 burnout error
5	AD2BO.st	Input-2 burnout error (UP750 only)
6	AD3BO.st	Input-3 burnout error
7		
8	RJC1ERR.st	Input-1 RJC error
9	RJC2ERR.st	Input-2 RJC error (UP750 only)
10 to 15		

● Bit Configuration of D0002: ERROR.1 (PV1 Error)

Bit	Code	Event
0	PV1ADC.st	PV1 A/D converter error
1	PV1BO.st	PV1 burnout error
2	RJC1ERR.st	PV1 RJC error
3		
4	PV1+over.st	PV1 over-scale
5	PV1-over.st	PV1 under-scale
6 to 13		
14	AT1ERR.st	Auto-tuning error
15		

● D0003: PV.1 (Measured input value [PV] for Loop-1)

● D0004: CSP.1 (Current target setpoint [SP] for Loop-1)

● D0005: OUT.1 (Control output value [OUT] for Loop-1)

- During PID computation, you can read the computation result as is from this register. For example, when the computation result is 75.0%, the register contains a value of “750.”
- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains a value half the PID computation result.

● D0006: HOUT.1 (Heating-side control output for Loop-1 in Heating/Cooling Control)

- During heating/cooling computation, this register contains the heating-side control output value.

● D0007: COUT.1 (Cooling-side control output for Loop-1 in Heating/Cooling Control)

- During heating/cooling computation, this register contains the cooling-side control output value.

● Bit Configuration of D0008: MOD.1 (Operation mode of Loop-1)

Bit	Code	Event
0	A/M1.st	0: AUTO; 1: MAN
1 to 7		
8	RESET.st	1: Program reset
9	PROG.st	1: Program operation
10	LOCAL.st	1: Local operation
11		
12	HOLD.st	1: Pause
13	WAIT.st	1: Wait
14	AT1.st	0: Auto-tuning is OFF; 1: Auto-tuning is ON
15		

● D0009: PIDNO.1 (Current PID number for Loop-1)

Bit	Code	Event
0	PIDNO.0	Bit 0 of the current PID number
1	PIDNO.1	Bit 1 of the current PID number
2	PIDNO.2	Bit 2 of the current PID number
3	PIDNO.3	Bit 3 of the current PID number
4 to 15		

From this register, you can read the PID number currently in use in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = on”, which is represented as “0101” in binary notation and as “5” in decimal notation, indicates that the PID number currently being used is 5.

● Bit Configuration of D0011: ALM (Alarm Status)

Bit	Code	Event
0	ALM11.st	‘1’ when alarm 1 for Loop-1 is ON; ‘0’ when OFF
1	ALM12.st	‘1’ when alarm 2 for Loop-1 is ON; ‘0’ when OFF
2	ALM13.st	‘1’ when alarm 3 for Loop-1 is ON; ‘0’ when OFF
3		
4	ALM14.st	‘1’ when alarm 4 for Loop-1 is ON; ‘0’ when OFF
5	OR1.st	‘1’ when sensor grounding alarm for Loop-1 is ON; ‘0’ when OFF
6 to 12		
13	OR2.st	‘1’ when sensor grounding alarm for Loop-2 is ON; ‘0’ when OFF
14, 15		

● Bit Configuration of D0012: PVEV (PV Event Status)

Bit	Code	Event
0	PVE1.st	'1' when PV event 1 is ON; '0' when OFF
1	PVE2.st	'1' when PV event 2 is ON; '0' when OFF
2	PVE3.st	'1' when PV event 3 is ON; '0' when OFF
3		
4	PVE4.st	'1' when PV event 4 is ON; '0' when OFF
5	PVE5.st	'1' when PV event 5 is ON; '0' when OFF
6	PVE6.st	'1' when PV event 6 is ON; '0' when OFF
7		
8	PVE7.st	'1' when PV event 7 is ON; '0' when OFF
9	PVE8.st	'1' when PV event 8 is ON; '0' when OFF
10 to 15		

● Bit Configuration of D0013: TMEV1 (Time Event Status)

Bit	Code	Event
0	TME1.st	'1' when time event 1 is ON; '0' when OFF
1	TME2.st	'1' when time event 2 is ON; '0' when OFF
2	TME3.st	'1' when time event 3 is ON; '0' when OFF
3		
4	TME4.st	'1' when time event 4 is ON; '0' when OFF
5	TME5.st	'1' when time event 5 is ON; '0' when OFF
6	TME6.st	'1' when time event 6 is ON; '0' when OFF
7		
8	TME7.st	'1' when time event 7 is ON; '0' when OFF
9	TME8.st	'1' when time event 8 is ON; '0' when OFF
10 to 15		

● Bit Configuration of D0014: TMEV2 (Time Event Status)

Continued from D0013 (time event status).

Bit	Code	Event
0	TME9.st	'1' when time event 9 is ON; '0' when OFF
1	TME10.st	'1' when time event 10 is ON; '0' when OFF
2	TME11.st	'1' when time event 11 is ON; '0' when OFF
3		
4	TME12.st	'1' when time event 12 is ON; '0' when OFF
5	TME13.st	'1' when time event 13 is ON; '0' when OFF
6	TME14.st	'1' when time event 14 is ON; '0' when OFF
7		
8	TME15.st	'1' when time event 15 is ON; '0' when OFF
9	TME16.st	'1' when time event 16 is ON; '0' when OFF
10, 11		
12	PTEND.st	'1' when program pattern ends
13 to 15		

● D0015: PTN (Program pattern number in operation)

● D0016: SEGNO (Current segment number)

● D0017: TIME (Remaining time of the current segment, or elapsed time during wait status)

● Bit Configuration of D0018: ERROR.2 (PV2 Error)

Bit	Code	Event
0	PV2ADC.st	PV2 A/D converter error
1	PV2BO.st	PV2 burnout error
2	RJC2ERR.st	PV2 RJC error (UP750 only)
3		
4	PV2+over.st	PV2 over-scale
5	PV2-over.st	PV2 under-scale
6 to 13		
14	AT2ERR.st	Auto-tuning error
15		

● D0019: PV.2 (Measured input value [PV] for Loop-2)

● D0020: CSP.2 (Current target setpoint [SP] for Loop-2)

● D0021: OUT.2 (Control output value [OUT] for Loop-2)

- During PID computation, you can read the computation result as is from this register. For example, when the computation result is 75.0%, the register contains a value of “750.”
- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains a value half the PID computation result.

● D0022: HOUT.2 (Heating-side control output for Loop-2 in Heating/Cooling Control)

- During heating/cooling computation, this register contains the heating-side control output value.

● D0023: COUT.2 (Cooling-side control output for Loop-2 in Heating/Cooling Control)

- During heating/cooling computation, this register contains the cooling-side control output value.

● Bit Configuration of D0024: MOD.2 (Operation mode of Loop-2)

Bit	Code	Event
0	A/M2.st	0: AUTO; 1: MAN (UP750 only)
1 to 7		
8	CAS/LSP.st	0: CAS (cascade); 1: LSP (local) (Note 1)
9 to 13		
14	AT2.st	0: Auto-tuning is OFF; 1: Auto-tuning is ON
15		

Note 1 : Used when the controller mode (UP mode) is cascade control or cascade control with two universal inputs.

● D0025: PIDNO.2 (Current PID number for Loop-2)

Bit	Code	Event
0	PIDNO2.0	Bit 0 of the current PID number
1	PIDNO2.1	Bit 1 of the current PID number
2	PIDNO2.2	Bit 2 of the current PID number
3	PIDNO2.3	Bit 3 of the current PID number
4 to 15		

From this register, you can read the PID number currently in use in the form of a binary bit string. For example, the configuration of “bit 3 = off; bit 2 = on; bit 1 = off; bit 0 = on”, which is represented as “0101” in binary notation and as “5” in decimal notation, indicates that the currently used PID number is 5.

● D0026: DEV.1 (Deviation for Loop-1)

● D0027: OR.1 (Moving average of sensor grounding alarm for Loop-1)

● D0030: DEV.2 (Deviation for Loop-2)

● D0031: OR.2 (Moving average of sensor grounding alarm for Loop-2)

● D0032: SMEC (Sampling error counter).

● Bit Configuration of D0033: DISTS (Statuses of External Contact Inputs)

Bit	Code	Event
0	DI1.st	Status of external contact input terminal 1 (1: contact is ON; 0: contact is OFF)
1	DI2.st	Status of external contact input terminal 2 (1: contact is ON; 0: contact is OFF)
2	DI3.st	Status of external contact input terminal 3 (1: contact is ON; 0: contact is OFF)
3	DI4.st	Status of external contact input terminal 4 (1: contact is ON; 0: contact is OFF)
4	DI5.st	Status of external contact input terminal 5 (1: contact is ON; 0: contact is OFF)
5	DI6.st	Status of external contact input terminal 6 (1: contact is ON; 0: contact is OFF)
6	DI7.st	Status of external contact input terminal 7 (1: contact is ON; 0: contact is OFF)
7	DI8.st	Status of external contact input terminal 8 (1: contact is ON; 0: contact is OFF) (UP550 only)
8	DP1*	Status of interruptive operation display 1 (1: displayed; 0: not displayed)
9	DP2*	Status of interruptive operation display 2 (1: displayed; 0: not displayed)
10	MG1	Status of interruptive message 1 (1: displayed; 0: not displayed)
11	MG2	Status of interruptive message 2 (1: displayed; 0: not displayed)
12	MG3	Status of interruptive message 3 (1: displayed; 0: not displayed)
13	MG4	Status of interruptive message 4 (1: displayed; 0: not displayed)
14, 15		

*: This function is set up using the optional LL200 PC-based Custom Computation Building Tool. Functions assigned to external contact inputs vary depending on the setting of the controller mode (UP mode) and whether or not functions have been assigned to the contact inputs.

[See Also] User's manual of UP750/UP550, for the function assignments of external contact inputs.

● Bit Configuration of D0034: RDISTS (Statuses of I/O expansion module's external contact inputs) (UP750 only)

Bit	Code	Event
0	RDI101.st	Input terminal 1 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
1	RDI102.st	Input terminal 2 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
2	RDI103.st	Input terminal 3 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
3	RDI104.st	Input terminal 4 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
4	RDI105.st	Input terminal 5 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
5	RDI106.st	Input terminal 6 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
6	RDI107.st	Input terminal 7 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
7	RDI108.st	Input terminal 8 status of expansion module-1 (1: contact is ON; 0: contact is OFF)
8	RDI201.st	Input terminal 1 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
9	RDI202.st	Input terminal 2 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
10	RDI203.st	Input terminal 3 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
11	RDI204.st	Input terminal 4 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
12	RDI205.st	Input terminal 5 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
13	RDI206.st	Input terminal 6 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
14	RDI207.st	Input terminal 7 status of expansion module-2 (1: contact is ON; 0: contact is OFF)
15	RDI208.st	Input terminal 8 status of expansion module-2 (1: contact is ON; 0: contact is OFF)

Initially, no function is assigned to the external contact inputs via an expansion module. Statuses of these contact inputs can be read only after functions are assigned to them.

[See Also] User's manual of UP750, for function assignment of external contact inputs via an expansion module.

● Bit Configuration of D0035: PARAERR (Error in calibration values and parameters)

Bit	Code	Event
0	CALB.E.st	Calibration value error
1		
2	USER.E.st	Error in the data set using the custom computation building tool (UP750 only)
3		
4	UPMD.st	UP mode error
5	RANGE.st	Input range data error
6	SETUP.st	Setup parameter error
7		
8	PARA.E.st	Operation parameter error
9	MODE.E.st	Error in power-failure backup data
10	FILE.E.st	Program pattern error
11 to 13		
14	SYSTEM.E.st	System data error
15		

● Bit Configuration of D0036: ALOSTS (Status of alarm output)

Bit	Code	Event
0	ALO11	Status of output assigned with alarm 1 for Loop-1 0: alarm is OFF for “energized” type alarm or ON for “deenergized” type alarm (the relay contact is open) 1: alarm is ON for “energized” type alarm or OFF for “deenergized” type alarm (the relay contact is closed)
1	ALO12	Status of output assigned with alarm 2 for Loop-1 Bit status information is the same as bit 0.
2	ALO13	Status of output assigned with alarm 3 for Loop-1 Bit status information is the same as bit 0.
3		
4	ALO14	Status of output assigned with alarm 4 for Loop-1 Bit status information is the same as bit 0.
5 to 15		

● D0039: DISP1 (Setting value of the parameter for Interruptive Operation Display-1 defined using the Custom Computation Building Tool) UP750 only

● D0040: DISP2 (Setting value of the parameter for Interruptive Operation Display-2 defined using the Custom Computation Building Tool) UP750 only

● D0041: TIME (Remaining time of the current segment, or elapsed time during wait status)

Same as D0017.

● D0042: PTNO (Program pattern number in operation)

● D0043: SEGNO (Current segment number)

● D0044: SEGUSE (Number of segments contained in the selected pattern)

● D0045: REM.RCY (Number of repetitions of the pattern in operation)

● D0046: ALL.RCY (Remaining number of repetitions of the pattern in operation)

● D0047: RST (Repeat Start number of the current segment)

● D0048: REN (Repeat End number of the current segment)

● Bit Configuration of D0049: PVEOSTS (Status of PV event output)

Bit	Code	Event
0	PVEO1.st	Status of output assigned with PV event 1 0: event is OFF when “energized” type is selected, or ON when “deenergized” type is selected (the relay contact is open) 1: event is ON when “energized” type is selected, or OFF when “deenergized” type is selected (the relay contact is closed)
1	PVEO2.st	Status of output assigned with PV event 2 Bit status information is the same as bit 0.
2	PVEO3.st	Status of output assigned with PV event 3 Bit status information is the same as bit 0.
3		
4	PVEO4.st	Status of output assigned with PV event 4 Bit status information is the same as bit 0.
5 to 7		
8	PVEO5.st	Status of output assigned with PV event 5 Bit status information is the same as bit 0.
9	PVEO6.st	Status of output assigned with PV event 6 Bit status information is the same as bit 0.
10	PVEO7.st	Status of output assigned with PV event 7 Bit status information is the same as bit 0.
11		
12	PVEO8.st	Status of output assigned with PV event 8 Bit status information is the same as bit 0.
13 to 15		

4.4.2 User Area

Register No.	Category	Description
D0050 to D0100	User area	Users can read/write data from/to the registers in this area. However, if a graphic panel is used in the system, users cannot use this area.

4.5 Program Data

Area for Program Data									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0101	40101	0064	LSP1	R/W	D0151				
D0102	40102	0065	LSP2	R/W	D0152				
D0103	40103	0066	PIDNO	R/W	D0153				
D0104	40104	0067	EV21A	R/W	D0154				
D0105	40105	0068	EV21B	R/W	D0155				
D0106	40106	0069	EV22A	R/W	D0156				
D0107	40107	006A	EV22B	R/W	D0157				
D0108	40108	006B	EV23A	R/W	D0158				
D0109	40109	006C	EV23B	R/W	D0159				
D0110	40110	006D	EV24A	R/W	D0160				
D0111	40111	006E	EV24B	R/W	D0161				
D0112	40112	006F	EV25A	R/W	D0162				
D0113	40113	0070	EV25B	R/W	D0163				
D0114	40114	0071	EV26A	R/W	D0164				
D0115	40115	0072	EV26B	R/W	D0165				
D0116	40116	0073	EV27A	R/W	D0166				
D0117	40117	0074	EV27B	R/W	D0167				
D0118	40118	0075	EV28A	R/W	D0168				
D0119	40119	0076	EV28B	R/W	D0169				
D0120					D0170				
D0121					D0171				
D0122					D0172				
D0123					D0173				
D0124					D0174				
D0125					D0175				
D0126					D0176				
D0127					D0177				
D0128					D0178				
D0129					D0179				
D0130					D0180				
D0131					D0181				
D0132					D0182				
D0133					D0183				
D0134					D0184				
D0135					D0185				
D0136					D0186				
D0137					D0187				
D0138					D0188				
D0139					D0189				
D0140					D0190				
D0141					D0191				
D0142					D0192				
D0143					D0193				
D0144					D0194				
D0145					D0195				
D0146					D0196				
D0147					D0197				
D0148					D0198				
D0149					D0199				
D0150					D0200				

4.6 Operation Mode and Computation Parameters

Area for Operation Mode and Computation Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0201					D0251	40251	00FA	ORH.1	R/W
D0202					D0252	40252	00FB	ORL.1	R/W
D0203					D0253	40253	00FC	S.TM	R/W
D0204					D0254				
D0205					D0255				
D0206					D0256				
D0207					D0257				
D0208	40208	00CF	R/P/L	R/W	D0258				
D0209	40209	00D0	HOLD	R/W	D0259				
D0210	40210	00D1	ADV	R/W	D0260				
D0211	40211	00D2	A/M.1	R/W	D0261				
D0212	40212	00D3	A/M.2	R/W	D0262				
D0213	40213	00D4	LSP/CAS	R/W	D0263				
D0214	40214	00D5	PTNO	R/W	D0264				
D0215					D0265				
D0216					D0266				
D0217	40217	00D8	MOUT.1	R/W	D0267				
D0218	40218	00D9	MOUTc.1	R/W	D0268				
D0219	40219	00DA	MOUT.2	R/W	D0269				
D0220	40220	00DB	MOUTc.2	R/W	D0270				
D0221	40221	00DC	HOLDDSP.1	R/W	D0271	40271	010E	AT.2	R/W
D0222	40222	00DD	HOLDDSP2	R/W	D0272	40272	010F	SC.2	R/W
D0223	40223	00DE	HOLDTM	R/W	D0273	40273	0110	BS.2	R/W
D0224	40224	00DF	SST	R/W	D0274	40274	0111	FL.2	R/W
D0225					D0275				
D0226					D0276				
D0227					D0277				
D0228					D0278				
D0229					D0279				
D0230					D0280	40280	0117	ORB.2	R/W
D0231	40231	00E6	A1	R/W	D0281	40281	0118	ORH.2	R/W
D0232	40232	00E7	A2	R/W	D0282	40282	0119	ORL.2	R/W
D0233	40233	00E8	A3	R/W	D0283				
D0234	40234	00E9	A4	R/W	D0284				
D0235					D0285				
D0236					D0286				
D0237					D0287				
D0238					D0288				
D0239					D0289				
D0240					D0290				
D0241	40241	00F0	AT.1	R/W	D0291				
D0242	40242	00F1	SC.1	R/W	D0292				
D0243	40243	00F2	BS.1	R/W	D0293				
D0244	40244	00F3	FL.1	R/W	D0294				
D0245					D0295				
D0246					D0296				
D0247					D0297				
D0248					D0298				
D0249					D0299				
D0250	40250	00F9	ORB.1	R/W	D0300				

4.6.1 Operation Mode Information

The mode registers listed below are designed to show, by the value contained, which mode is selected.

You can change the mode by writing a different mode into the register via communication.

● D0208: R/P/L (Program reset/Program modes)

When D0208 = 0, program operation is reset.

When D0208 = 1, program operation.

When D0208 = 2, local operation.

● D0209: HOLD (Program operation in HOLD state)

When D0209 = 0, program operation is in progress.

When D0209 = 1, program operation is paused.

● D0210: ADV (Forced segment advance)

When D0210 = 0, segment has been advanced or not advanced yet.

When D0210 = 1, advance one segment.

● D0211: A/M1 (AUTO/MAN modes for Loop-1)

When D0211 = 0, Loop-1 is in the AUTO mode.

When D0211 = 1, Loop-1 is in the MAN mode.

● D0212: A/M2 (AUTO/MAN modes for Loop-2)

When D0212 = 0, Loop-2 is in the AUTO mode.

When D0212 = 1, Loop-2 is in the MAN mode.

● D0213: LSP/CAS (LOCAL/CAS modes)

Used when the controller mode (UP mode) is cascade control or cascade control with two universal inputs.

When D0213 = 0, the controller is in the CAS (cascade) mode.

When D0213 = 1, the controller is in the LOCAL mode.

4.6.2 Write-only Data Area

The registers listed below are write-only registers that are accessed by a higher-level device.

Register No.	Code	Description
D0217	MOUT.1	Used to set control output value or heating-side control output value when Loop-1 is in the MAN mode.
D0218	MOUTc.1	Used to set cooling-side control output value when Loop-1 is in the MAN mode.
D0219	MOUT.2	Used to set control output value or heating-side control output value when Loop-2 is in the MAN mode.
D0220	MOUTc.2	Used to set cooling-side control output value when Loop-2 is in the MAN mode.
D0221	HOLDSP.1	Used to set Loop-1 SP for HOLD state.
D0222	HOLDSP.2	Used to set Loop-2 SP for HOLD state.
D0223	HOLDTM	Used to set HOLD time.
D0224	SST	Used to set segment number for program start.

■ Writing a Control Output Value in MAN Mode

You can write a control output value via communication only when the loop is in MAN mode.

(1) Set the loop to MAN mode.

(2) Write the control output value to MOUT.1, MOUT.2, MOUTc.1 or MOUTc.2 register.

In this way, you can operate the controller in MAN mode to set control output values via communication.

■ Manipulating Valves (UP550-1□ only)

In the MAN mode with position-proportional PID computation, write a valve position into the MOUT.1 register.

4.6.3 Data Area for Computation Parameters

Register No.	Category	Description	Remarks
D0231 to D0234	Alarm setpoints	A1 to A4: Alarm setpoint for alarm 1 to 4	For details on the parameters, see the User s Manual of UP750/UP550.
D0241 to D0252	Loop-1 computation parameters	AT.1: Loop-1 auto-tuning selection SC.1: Loop-1 SUPER function selection BS.1: Loop-1 PV bias FL.1: Loop-1 PV filter ORB.1: Loop-1 ON/OFF rate detection band ORH.1: Loop-1 ON/OFF rate high-limit ORL.1: Loop-1 ON/OFF rate low-limit	
D0271 to D0282	Loop-2 computation parameters	The Loop-2 computation parameters, i.e., AT.2 through ORL.2, are functionally the same as their corresponding Loop-1 computation parameters.	

● D0253: S.TM (Start time of program pattern operation)

00.00 to 99.59 (hh.mm or mm.ss)

4.7 Loop-1 PID Parameters

Area for Loop-1 PID Parameters (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0301					D0351				
D0302					D0352				
D0303					D0353				
D0304					D0354				
D0305					D0355				
D0306	40306	0131	1.P	R/W	D0356	40356	0163	3.P	R/W
D0307	40307	0132	1.I	R/W	D0357	40357	0164	3.I	R/W
D0308	40308	0133	1.D	R/W	D0358	40358	0165	3.D	R/W
D0309	40309	0134	1.OH	R/W	D0359	40359	0166	3.OH	R/W
D0310	40310	0135	1.OL	R/W	D0360	40360	0167	3.OL	R/W
D0311	40311	0136	1.MR	R/W	D0361	40361	0168	3.MR	R/W
D0312	40312	0137	1.H	R/W	D0362	40362	0169	3.H	R/W
D0313	40313	0138	1.DR	R/W	D0363	40363	016A	3.DR	R/W
D0314	40314	0139	1.Pc	R/W	D0364	40364	016B	3.Pc	R/W
D0315	40315	013A	1.Ic	R/W	D0365	40365	016C	3.Ic	R/W
D0316	40316	013B	1.Dc	R/W	D0366	40366	016D	3.Dc	R/W
D0317	40317	013C	1.Hc	R/W	D0367	40367	016E	3.Hc	R/W
D0318	40318	013D	1.DB	R/W	D0368	40368	016F	3.DB	R/W
D0319	40319	013E	1.RP	R/W	D0369	40369	0170	3.RP	R/W
D0320	40320	013F	1.PO	R/W	D0370	40370	0171	3.PO	R/W
D0321	40321	0140	1.Oc	R/W	D0371	40371	0172	3.Oc	R/W
D0322					D0372				
D0323					D0373				
D0324					D0374				
D0325					D0375				
D0326					D0376				
D0327					D0377				
D0328					D0378				
D0329					D0379				
D0330					D0380				
D0331	40331	014A	2.P	R/W	D0381	40381	017C	4.P	R/W
D0332	40332	014B	2.I	R/W	D0382	40382	017D	4.I	R/W
D0333	40333	014C	2.D	R/W	D0383	40383	017E	4.D	R/W
D0334	40334	014D	2.OH	R/W	D0384	40384	017F	4.OH	R/W
D0335	40335	014E	2.OL	R/W	D0385	40385	0180	4.OL	R/W
D0336	40336	014F	2.MR	R/W	D0386	40386	0181	4.MR	R/W
D0337	40337	0150	2.H	R/W	D0387	40387	0182	4.H	R/W
D0338	40338	0151	2.DR	R/W	D0388	40388	0183	4.DR	R/W
D0339	40339	0152	2.Pc	R/W	D0389	40389	0184	4.Pc	R/W
D0340	40340	0153	2.Ic	R/W	D0390	40390	0185	4.Ic	R/W
D0341	40341	0154	2.Dc	R/W	D0391	40391	0186	4.Dc	R/W
D0342	40342	0155	2.Hc	R/W	D0392	40392	0187	4.Hc	R/W
D0343	40343	0156	2.DB	R/W	D0393	40393	0188	4.DB	R/W
D0344	40344	0157	2.RP	R/W	D0394	40394	0189	4.RP	R/W
D0345	40345	0158	2.PO	R/W	D0395	40395	018A	4.PO	R/W
D0346	40346	0159	2.Oc	R/W	D0396	40396	018B	4.Oc	R/W
D0347					D0397				
D0348					D0398				
D0349					D0399				
D0350					D0400				

Area for Loop-1 PID Parameters (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0401					D0451				
D0402					D0452				
D0403					D0453				
D0404					D0454				
D0405					D0455				
D0406	40406	0195	5.P	R/W	D0456	40456	01C7	7.P	R/W
D0407	40407	0196	5.I	R/W	D0457	40457	01C8	7.I	R/W
D0408	40408	0197	5.D	R/W	D0458	40458	01C9	7.D	R/W
D0409	40409	0198	5.OH	R/W	D0459	40459	01CA	7.OH	R/W
D0410	40410	0199	5.OL	R/W	D0460	40460	01CB	7.OL	R/W
D0411	40411	019A	5.MR	R/W	D0461	40461	01CC	7.MR	R/W
D0412	40412	019B	5.H	R/W	D0462	40462	01CD	7.H	R/W
D0413	40413	019C	5.DR	R/W	D0463	40463	01CE	7.DR	R/W
D0414	40414	019D	5.Pc	R/W	D0464	40464	01CF	7.Pc	R/W
D0415	40415	019E	5.Ic	R/W	D0465	40465	01D0	7.Ic	R/W
D0416	40416	019F	5.Dc	R/W	D0466	40466	01D1	7.Dc	R/W
D0417	40417	01A0	5.Hc	R/W	D0467	40467	01D2	7.Hc	R/W
D0418	40418	01A1	5.DB	R/W	D0468	40468	01D3	7.DB	R/W
D0419	40419	01A2	5.RP	R/W	D0469	40469	01D4	RHY	R/W
D0420	40420	01A3	5.PO	R/W	D0470	40470	01D5	7.PO	R/W
D0421	40421	01A4	5.Oc	R/W	D0471	40471	01D6	7.Oc	R/W
D0422					D0472				
D0423					D0473				
D0424					D0474				
D0425					D0475				
D0426					D0476				
D0427					D0477				
D0428					D0478				
D0429					D0479				
D0430					D0480				
D0431	40431	01AE	6.P	R/W	D0481	40481	01E0	8.P	R/W
D0432	40432	01AF	6.I	R/W	D0482	40482	01E1	8.I	R/W
D0433	40433	01B0	6.D	R/W	D0483	40483	01E2	8.D	R/W
D0434	40434	01B1	6.OH	R/W	D0484	40484	01E3	8.OH	R/W
D0435	40435	01B2	6.OL	R/W	D0485	40485	01E4	8.OL	R/W
D0436	40436	01B3	6.MR	R/W	D0486	40486	01E5	8.MR	R/W
D0437	40437	01B4	6.H	R/W	D0487	40487	01E6	8.H	R/W
D0438	40438	01B5	6.DR	R/W	D0488	40488	01E7	8.DR	R/W
D0439	40439	01B6	6.Pc	R/W	D0489	40489	01E8	8.Pc	R/W
D0440	40440	01B7	6.Ic	R/W	D0490	40490	01E9	8.Ic	R/W
D0441	40441	01B8	6.Dc	R/W	D0491	40491	01EA	8.Dc	R/W
D0442	40442	01B9	6.Hc	R/W	D0492	40492	01EB	8.Hc	R/W
D0443	40443	01BA	6.DB	R/W	D0493	40493	01EC	8.DB	R/W
D0444	40444	01BB	6.RP	R/W	D0494	40494	01ED	RDV	R/W
D0445	40445	01BC	6.PO	R/W	D0495	40495	01EE	8.PO	R/W
D0446	40446	01BD	6.Oc	R/W	D0496	40496	01EF	8.Oc	R/W
D0447					D0497				
D0448					D0498				
D0449					D0499				
D0450					D0500				

4.7.1 Data Area for Loop-1 PID Parameters

Register No.	Category	Description	Remarks
D0306 to D0321	Group-1 parameters for Loop-1	1.P: Proportional band 1.I: Integral time 1.D: Derivative time 1.OH: Upper limit of output 1.OL: Lower limit of output 1.MR: Manual reset 1.H: Hysteresis 1.DR: Direct/reverse action switchover 1.Pc: Cooling-side proportional band 1.Ic: Cooling-side integral time 1.Dc: Cooling-side derivative time 1.Hc: Cooling-side relay hysteresis 1.DB: Deadband 1.RP: Zone PID reference point 1.PO: Preset output value 1.Oc: Cooling-side preset output value	Selecting an SP number by means of communication enables a parameter group with the same number to be used for both Loop-1 and Loop-2 simultaneously. For example, if you set the SP number selection parameter (SPNO) to 5, the parameters from 5.P through 5.Oc are used. For details on the parameters, see the User's Manual of UP750/UP550.
D0331 to D0346	Group-2 parameters for Loop-1	The parameters from 2.P to 2.Oc are functionally the same as their corresponding group-1 parameters.	
D0356 to D0371	Group-3 parameters for Loop-1	The parameters from 3.P to 3.Oc are functionally the same as their corresponding group-1 parameters.	
D0381 to D0396	Group-4 parameters for Loop-1	The parameters from 4.P to 4.Oc are functionally the same as their corresponding group-1 parameters.	
D0406 to D0421	Group-5 parameters for Loop-1	The parameters from 5.P to 5.Oc are functionally the same as their corresponding group-1 parameters.	
D0431 to D0446	Group-6 parameters for Loop-1	The parameters from 6.P to 6.Oc are functionally the same as their corresponding group-1 parameters.	
D0456 to D0471	Group-7 parameters for Loop-1	The parameters from 7.P to 7.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RHY, which corresponds to 1.RP, denotes the zone PID hysteresis.	
D0481 to D0496	Group-8 parameters for Loop-1	The parameters from 8.P to 8.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RDV, which corresponds to 1.RP, denotes the zone PID reference deviation.	

4.8 Loop-2 PID Parameters

Area for Loop-2 PID Parameters (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0501					D0551				
D0502					D0552				
D0503					D0553				
D0504					D0554				
D0505					D0555				
D0506	40506	01F9	1.P	R/W	D0556	40556	022B	3.P	R/W
D0507	40507	01FA	1.I	R/W	D0557	40557	022C	3.I	R/W
D0508	40508	01FB	1.D	R/W	D0558	40558	022D	3.D	R/W
D0509	40509	01FC	1.OH	R/W	D0559	40559	022E	3.OH	R/W
D0510	40510	01FD	1.OL	R/W	D0560	40560	022F	3.OL	R/W
D0511	40511	01FE	1.MR	R/W	D0561	40561	0230	3.MR	R/W
D0512	40512	01FF	1.H	R/W	D0562	40562	0231	3.H	R/W
D0513	40513	0200	1.DR	R/W	D0563	40563	0232	3.DR	R/W
D0514	40514	0201	1.Pc	R/W	D0564	40564	0233	3.Pc	R/W
D0515	40515	0202	1.Ic	R/W	D0565	40565	0234	3.Ic	R/W
D0516	40516	0203	1.Dc	R/W	D0566	40566	0235	3.Dc	R/W
D0517	40517	0204	1.Hc	R/W	D0567	40567	0236	3.Hc	R/W
D0518	40518	0205	1.DB	R/W	D0568	40568	0237	3.DB	R/W
D0519	40519	0206	1.RP	R/W	D0569	40569	0238	3.RP	R/W
D0520	40520	0207	1.PO	R/W	D0570	40570	0239	3.PO	R/W
D0521	40521	0208	1.Oc	R/W	D0571	40571	023A	3.Oc	R/W
D0522					D0572				
D0523					D0573				
D0524					D0574				
D0525					D0575				
D0526					D0576				
D0527					D0577				
D0528					D0578				
D0529					D0579				
D0530					D0580				
D0531	40531	0212	2.P	R/W	D0581	40581	0244	4.P	R/W
D0532	40532	0213	2.I	R/W	D0582	40582	0245	4.I	R/W
D0533	40533	0214	2.D	R/W	D0583	40583	0246	4.D	R/W
D0534	40534	0215	2.OH	R/W	D0584	40584	0247	4.OH	R/W
D0535	40535	0216	2.OL	R/W	D0585	40585	0248	4.OL	R/W
D0536	40536	0217	2.MR	R/W	D0586	40586	0249	4.MR	R/W
D0537	40537	0218	2.H	R/W	D0587	40587	024A	4.H	R/W
D0538	40538	0219	2.DR	R/W	D0588	40588	024B	4.DR	R/W
D0539	40539	021A	2.Pc	R/W	D0589	40589	024C	4.Pc	R/W
D0540	40540	021B	2.Ic	R/W	D0590	40590	024D	4.Ic	R/W
D0541	40541	021C	2.Dc	R/W	D0591	40591	024E	4.Dc	R/W
D0542	40542	021D	2.Hc	R/W	D0592	40592	024F	4.Hc	R/W
D0543	40543	021E	2.DB	R/W	D0593	40593	0250	4.DB	R/W
D0544	40544	021F	2.RP	R/W	D0594	40594	0251	4.RP	R/W
D0545	40545	0220	2.PO	R/W	D0595	40595	0252	4.PO	R/W
D0546	40546	0221	2.Oc	R/W	D0596	40596	0253	4.Oc	R/W
D0547					D0597				
D0548					D0598				
D0549					D0599				
D0550					D0600				

Area for Loop-2 PID Parameters (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0601					D0651				
D0602					D0652				
D0603					D0653				
D0604					D0654				
D0605					D0655				
D0606	40606	025D	5.P	R/W	D0656	40656	028F	7.P	R/W
D0607	40607	025E	5.I	R/W	D0657	40657	0290	7.I	R/W
D0608	40608	025F	5.D	R/W	D0658	40658	0291	7.D	R/W
D0609	40609	0260	5.OH	R/W	D0659	40659	0292	7.OH	R/W
D0610	40610	0261	5.OL	R/W	D0660	40660	0293	7.OL	R/W
D0611	40611	0262	5.MR	R/W	D0661	40661	0294	7.MR	R/W
D0612	40612	0263	5.H	R/W	D0662	40662	0295	7.H	R/W
D0613	40613	0264	5.DR	R/W	D0663	40663	0296	7.DR	R/W
D0614	40614	0265	5.Pc	R/W	D0664	40664	0297	7.Pc	R/W
D0615	40615	0266	5.Ic	R/W	D0665	40665	0298	7.Ic	R/W
D0616	40616	0267	5.Dc	R/W	D0666	40666	0299	7.Dc	R/W
D0617	40617	0268	5.Hc	R/W	D0667	40667	029A	7.Hc	R/W
D0618	40618	0269	5.DB	R/W	D0668	40668	029B	7.DB	R/W
D0619	40639	026A	5.RP	R/W	D0669	40669	029C	RHY	R/W
D0620	40620	026B	5.PO	R/W	D0670	40670	029D	7.PO	R/W
D0621	40621	026C	5.Oc	R/W	D0671	40671	029E	7.Oc	R/W
D0622					D0672				
D0623					D0673				
D0624					D0674				
D0625					D0675				
D0626					D0676				
D0627					D0677				
D0628					D0678				
D0629					D0679				
D0630					D0680				
D0631	40631	0276	6.P	R/W	D0681	40681	02A8	8.P	R/W
D0632	40632	0277	6.I	R/W	D0682	40682	02A9	8.I	R/W
D0633	40633	0278	6.D	R/W	D0683	40683	02AA	8.D	R/W
D0634	40634	0279	6.OH	R/W	D0684	40684	02AB	8.OH	R/W
D0635	40635	027A	6.OL	R/W	D0685	40685	02AC	8.OL	R/W
D0636	40636	027B	6.MR	R/W	D0686	40686	02AD	8.MR	R/W
D0637	40637	027C	6.H	R/W	D0687	40687	02AE	8.H	R/W
D0638	40638	027D	6.DR	R/W	D0688	40688	02AF	8.DR	R/W
D0639	40639	027E	6.Pc	R/W	D0689	40689	02B0	8.Pc	R/W
D0640	40640	027F	6.Ic	R/W	D0690	40690	02B1	8.Ic	R/W
D0641	40641	0280	6.Dc	R/W	D0691	40691	02B2	8.Dc	R/W
D0642	40642	0281	6.Hc	R/W	D0692	40692	02B3	8.Hc	R/W
D0643	40643	0282	6.DB	R/W	D0693	40693	02B4	8.DB	R/W
D0644	40644	0283	6.RP	R/W	D0694	40694	02B5	RDV	R/W
D0645	40645	0284	6.PO	R/W	D0695	40695	02B6	8.PO	R/W
D0646	40646	0285	6.Oc	R/W	D0696	40696	02B7	8.Oc	R/W
D0647					D0697				
D0648					D0698				
D0649					D0699				
D0650					D0700				

4.8.1 Data Area for Loop-2 PID Parameters

Register No.	Category	Description	Remarks
D0506 to D0521	Group-1 parameters for Loop-2	1.P: Proportional band 1.I: Integral time 1.D: Derivative time 1.OH: Upper limit of output 1.OL: Lower limit of output 1.MR: Manual reset 1.H: Hysteresis 1.DR: Direct/reverse action switchover 1.Pc: Cooling-side proportional band 1.Ic: Cooling-side integral time 1.Dc: Cooling-side derivative time 1.Hc: Cooling-side relay hysteresis 1.DB: Deadband 1.RP: Zone PID reference point 1.PO: Preset output value 1.Oc: Cooling-side preset output value	Selecting an SP number by means of communication enables a parameter group with the same number to be used for both Loop-1 and Loop-2 simultaneously. For example, if you set the SP number selection parameter (SPNO) to 5, the parameters from 5.P through 5.Oc are used. For details on the parameters, see the User s Manual of UP750/UP550.
D0531 to D0546	Group-2 parameters for Loop-2	The parameters from 2.P to 2.Oc are functionally the same as their corresponding group-1 parameters.	
D0556 to D0571	Group-3 parameters for Loop-2	The parameters from 3.P to 3.Oc are functionally the same as their corresponding group-1 parameters.	
D0581 to D0596	Group-4 parameters for Loop-2	The parameters from 4.P to 4.Oc are functionally the same as their corresponding group-1 parameters.	
D0606 to D0621	Group-5 parameters for Loop-2	The parameters from 5.P to 5.Oc are functionally the same as their corresponding group-1 parameters.	
D0631 to D0646	Group-6 parameters for Loop-2	The parameters from 6.P to 6.Oc are functionally the same as their corresponding group-1 parameters.	
D0656 to D0671	Group-7 parameters for Loop-2	The parameters from 7.P to 7.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RHY, which corresponds to 1.RP, denotes the zone PID hysteresis.	
D0681 to D0696	Group-8 parameters for Loop-2	The parameters from 8.P to 8.Oc are functionally the same as their corresponding group-1 parameters. However, parameter RDV, which corresponds to 1.RP, denotes the zone PID reference deviation.	

4.9 USER Parameters, Ten-segment Linearizer Parameters, and Messages

Area for USER Parameters and Ten-segment Linearizer Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0701	40701	02BC	U1	R/W	D0751	40751	02EE	2.A1	R/W
D0702	40702	02BD	U2	R/W	D0752	40752	02EF	2.B1	R/W
D0703	40703	02BE	U3	R/W	D0753	40753	02F0	2.A2	R/W
D0704	40704	02BF	U4	R/W	D0754	40754	02F1	2.B2	R/W
D0705	40705	02C0	U5	R/W	D0755	40755	02F2	2.A3	R/W
D0706	40706	02C1	U6	R/W	D0756	40756	02F3	2.B3	R/W
D0707	40707	02C2	U7	R/W	D0757	40757	02F4	2.A4	R/W
D0708	40708	02C3	U8	R/W	D0758	40758	02F5	2.B4	R/W
D0709	40709	02C4			D0759	40759	02F6	2.A5	R/W
D0710	40710	02C5			D0760	40760	02F7	2.B5	R/W
D0711	40711	02C6			D0761	40761	02F8	2.A6	R/W
D0712	40712	02C7			D0762	40762	02F9	2.B6	R/W
D0713	40713	02C8			D0763	40763	02FA	2.A7	R/W
D0714	40714	02C9			D0764	40764	02FB	2.B7	R/W
D0715	40715	02CA			D0765	40765	02FC	2.A8	R/W
D0716	40716	02CB			D0766	40766	02FD	2.B8	R/W
D0717	40717	02CC			D0767	40767	02FE	2.A9	R/W
D0718	40718	02CD			D0768	40768	02FF	2.B9	R/W
D0719	40719	02CE			D0769	40769	0300	2.A10	R/W
D0720	40720	02CF			D0770	40770	0301	2.B10	R/W
D0721	40721	02D0			D0771	40771	0302	2.A11	R/W
D0722	40722	02D1			D0772	40772	0303	2.B11	R/W
D0723	40723	02D2			D0773	40773	0304	2.PMD	R/W
D0724	40724	02D3			D0774				
D0725	40725	02D4			D0775				
D0726	40726	02D5	1.A1	R/W	D0776				
D0727	40727	02D6	1.B1	R/W	D0777				
D0728	40728	02D7	1.A2	R/W	D0778				
D0729	40729	02D8	1.B2	R/W	D0779				
D0730	40730	02D9	1.A3	R/W	D0780				
D0731	40731	02DA	1.B3	R/W	D0781				
D0732	40732	02DB	1.A4	R/W	D0782				
D0733	40733	02DC	1.B4	R/W	D0783				
D0734	40734	02DD	1.A5	R/W	D0784				
D0735	40735	02DE	1.B5	R/W	D0785				
D0736	40736	02DF	1.A6	R/W	D0786				
D0737	40737	02E0	1.B6	R/W	D0787				
D0738	40738	02E1	1.A7	R/W	D0788				
D0739	40739	02E2	1.B7	R/W	D0789				
D0740	40740	02E3	1.A8	R/W	D0790				
D0741	40741	02E4	1.B8	R/W	D0791				
D0742	40742	02E5	1.A9	R/W	D0792				
D0743	40743	02E6	1.B9	R/W	D0793				
D0744	40744	02E7	1.A10	R/W	D0794				
D0745	40745	02E8	1.B10	R/W	D0795				
D0746	40746	02E9	1.A11	R/W	D0796				
D0747	40747	02EA	1.B11	R/W	D0797				
D0748	40748	02EB	1.PMD	R/W	D0798				
D0749					D0799				
D0750					D0800				

Area for Messages									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0801	40801	0320	MG10	R	D0851				
D0802	40802	0321	MG11	R	D0852				
D0803	40803	0322	MG12	R	D0853				
D0804	40804	0323	MG13	R	D0854				
D0805	40805	0324	MG14	R	D0855				
D0806	40806	0325	MG15	R	D0856				
D0807	40807	0326	MG16	R	D0857				
D0808	40808	0327	MG17	R	D0858				
D0809	40809	0328	MG18	R	D0859				
D0810	40810	0329	MG19	R	D0860				
D0811	40811	032A	MG20	R	D0861				
D0812	40812	032B	MG21	R	D0862				
D0813	40813	032C	MG22	R	D0863				
D0814	40814	032D	MG23	R	D0864				
D0815	40815	032E	MG24	R	D0865				
D0816	40816	032F	MG25	R	D0866				
D0817	40817	0330	MG26	R	D0867				
D0818	40818	0331	MG27	R	D0868				
D0819	40819	0332	MG28	R	D0869				
D0820	40820	0333	MG29	R	D0870				
D0821	40821	0334	MG30	R	D0871				
D0822	40822	0335	MG31	R	D0872				
D0823	40823	0336	MG32	R	D0873				
D0824	40824	0337	MG33	R	D0874				
D0825	40825	0338	MG34	R	D0875				
D0826	40826	0339	MG35	R	D0876				
D0827	40827	033A	MG36	R	D0877				
D0828	40828	033B	MG37	R	D0878				
D0829	40829	033C	MG38	R	D0879				
D0830	40830	033D	MG39	R	D0880				
D0831	40831	033E	MG40	R	D0881				
D0832	40832	033F	MG41	R	D0882				
D0833	40833	0340	MG42	R	D0883				
D0834	40834	0341	MG43	R	D0884				
D0835	40835	0342	MG44	R	D0885				
D0836	40836	0343	MG45	R	D0886				
D0837	40837	0344	MG46	R	D0887				
D0838	40838	0345	MG47	R	D0888				
D0839	40839	0346	MG48	R	D0889				
D0840	40840	0347	MG49	R	D0890				
D0841	40841	0348	NAME1	R	D0891				
D0842	40842	0349	NAME2	R	D0892				
D0843	40843	034A	NAME3	R	D0893				
D0844	40844	034B	NAME4	R	D0894				
D0845	40845	034C	NAME5	R	D0895				
D0846	40846	034D	NAME6	R	D0896				
D0847	40847	034E	NAME7	R	D0897				
D0848	40848	034F	NAME8	R	D0898				
D0849	40849	0350	NAME9	R	D0899				
D0850	40850	0351	NAME10	R	D0900				

4.9.1 Data Area for USER Parameters

Register No.	Category	Description	Remarks
D0701 to D0708	User parameter	U1 to U8	Parameters U1 to U3 are used when the controller mode (UP mode) is set for loop control with PV switching, loop control with PV auto-selector, loop control with PV switching and two universal inputs, or loop control with PV auto-selector and two universal inputs. Parameters U4 to U8 are used when the controller is set up for custom computation control and are available only with UP750. **[See Also]** User's Manual of UP750/UP550.

4.9.2 Data Area for Parameters of Ten-segment Linearizers 1 and 2

Register No.	Category	Description	Remarks
D0726 to D0748	Ten-segment linearizer-1 parameters	1.A1: Ten-segment linearizer-1 input 1 1.B1: Ten-segment linearizer-1 output 1 1.A2: Ten-segment linearizer-1 input 2 1.B2: Ten-segment linearizer-1 output 2 1.A3: Ten-segment linearizer-1 input 3 1.B3: Ten-segment linearizer-1 output 3 1.A4: Ten-segment linearizer-1 input 4 1.B4: Ten-segment linearizer-1 output 4 1.A5: Ten-segment linearizer-1 input 5 1.B5: Ten-segment linearizer-1 output 5 1.A6: Ten-segment linearizer-1 input 6 1.B6: Ten-segment linearizer-1 output 6 1.A7: Ten-segment linearizer-1 input 7 1.B7: Ten-segment linearizer-1 output 7 1.A8: Ten-segment linearizer-1 input 8 1.B8: Ten-segment linearizer-1 output 8 1.A9: Ten-segment linearizer-1 input 9 1.B9: Ten-segment linearizer-1 output 9 1.A10: Ten-segment linearizer-1 input 10 1.B10: Ten-segment linearizer-1 output 10 1.A11: Ten-segment linearizer-1 input 11 1.B11: Ten-segment linearizer 1 output 11 1.PMD: Ten-segment linearizer 1 mode	For details on the parameters, see the User s Manual of UP750/UP550. 1. A1≤1.A2≤...≤1.A11 1. B1≤1.B2≤...≤1.B11 Unit and setting range -66.7 through 105.0% of PV input range; -66.7 through 105.0% of PV input range span; % data: -5.0 through 105.0%
D0751 to D0773	Ten-segment linearizer-2 parameters	The parameters from 2.A1 to 2.PMD are functionally the same as their corresponding parameters for ten-segment linearizer-1.	

4.9.3 Area for Message

Register No.	Category	Description	Remarks
D0801 to D0820	Message text setting	MG10 to MG29	These registers store the messages registered using the LL100 PC-based Parameters Setting Tool. Each message text should include no more than 33 alphanumeric characters. You can register a maximum of four messages.
D0821 to D0840	Message 2 text setting	MG30 to MG49	
D0841 to D0850	Name text setting	NAME1 to NAME10	

Message (MG) To display a message on the LCD display of UP750/UP550, do the following.

(1) Assign the interruptive message display function to a contact input.

(2) Register a message using LL100 PC-based Parameters Setting Tool.

(3) Turn ON the contact input.
However, assigning the setup parameters MG1 to MG4 to the external contact inputs is required.

Name (NAME) The characters entered in the name area will not be shown on UP750/UP550's display. This name is used as a tag name, instrument name, or other.

4.10 Control Action, Loop-common Function, and I/O Configuration Parameters

Area for Control Action Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0901					D0951				
D0902	40902	0385	SPT.1	R/W	D0952				
D0903					D0953				
D0904	40904	0387	TMU.1	R/W	D0954				
D0905	40905	0388	SEG.T	R/W	D0955				
D0906	40906	0389	PT2.G	R/W	D0956				
D0907	40907	038A	EHY1	R/W	D0957				
D0908	40908	038B	EHY2	R/W	D0958				
D0909	40909	038C	EHY3	R/W	D0959				
D0910	40910	038D	EHY4	R/W	D0960				
D0911	40911	038E	EHY5	R/W	D0961				
D0912	40912	038F	EHY6	R/W	D0962				
D0913	40913	0390	EHY7	R/W	D0963				
D0914	40914	0391	EHY8	R/W	D0964				
D0915	40915	0392	AL1.1	R/W	D0965				
D0916	40916	0393	AL2.1	R/W	D0966	40966	03C5	OPR.2	R/W
D0917	40917	0394	AL3.1	R/W	D0967	40967	03C6	MOD.2	R/W
D0918	40918	0395	AL4.1	R/W	D0968	40968	03C7	AR.2	R/W
D0919	40919	0396	HY1.1	R/W	D0969				
D0920	40920	0397	HY2.1	R/W	D0970				
D0921	40921	0398	HY3.1	R/W	D0971				
D0922	40922	0399	HY4.1	R/W	D0972				
D0923	40923	039A	AMD.1	R/W	D0973	40973	03CC	SPH.2	R/W
D0924					D0974	40974	03CD	SPL.2	R/W
D0925					D0975				
D0926	40926	039D	OPR.1	R/W	D0976				
D0927	40927	039E	MOD.1	R/W	D0977				
D0928	40928	039F	AR.1	R/W	D0978				
D0929	40929	03A0	ZON	R/W	D0979				
D0930	40930	03A1	R.MD	R/W	D0980				
D0931	40931	03A2	R.TM	R/W	D0981				
D0932					D0982				
D0933	40933	03A4	SPH.1	R/W	D0983				
D0934	40934	03A5	SPL.1	R/W	D0984				
D0935					D0985				
D0936					D0986				
D0937					D0987				
D0938					D0988				
D0939	40939	03AA	PNC	R/W	D0989				
D0940					D0990				
D0941					D0991				
D0942					D0992				
D0943					D0993				
D0944					D0994				
D0945					D0995				
D0946					D0996				
D0947					D0997				
D0948					D0998				
D0949					D0999				
D0950					D1000				

Area for Loop-common Function Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1001	41001	03E8	A.BS1	R/W	D1051				
D1002	41002	03E9	A.FL1	R/W	D1052				
D1003	41003	03EA	A.SR1	R/W	D1053				
D1004	41004	03EB	A.LC1	R/W	D1054				
D1005	41005	03EC	A.BS2	R/W	D1055				
D1006	41006	03ED	A.FL2	R/W	D1056				
D1007	41007	03EE	A.SR2	R/W	D1057				
D1008	41008	03EF	A.LC2	R/W	D1058				
D1009	41009	03F0	A.BS3	R/W	D1059				
D1010	41010	03F1	A.FL3	R/W	D1060				
D1011	41011	03F2	A.SR3	R/W	D1061				
D1012	41012	03F3	A.LC3	R/W	D1062				
D1013	41013	03F4	RET1	R/W	D1063				
D1014	41014	03F5	RTH1	R/W	D1064				
D1015	41015	03F6	RTL1	R/W	D1065				
D1016	41016	03F7	RET2	R/W	D1066				
D1017	41017	03F8	RTH2	R/W	D1067				
D1018	41018	03F9	RTL2	R/W	D1068				
D1019					D1069				
D1020					D1070				
D1021	41021	03FC	TSC1	R/W	D1071				
D1022	41022	03FD	TSC2	R/W	D1072				
D1023	41023	03FE	TTM	R/W	D1073				
D1024	41024	03FF	▲▼	R/W	D1074				
D1025					D1075				
D1026	41026	0401	PT.NO	R/W	D1076				
D1027	41027	0402	RUN	R/W	D1077				
D1028	41028	0403	MODE	R/W	D1078				
D1029	41028	0404	PRG	R/W	D1079				
D1030	41030	0405	LP1	R/W	D1080				
D1031	41031	0406	LP2	R/W	D1081				
D1032	41032	0407	PID	R/W	D1082				
D1033	41033	0408	USR	R/W	D1083				
D1034	41034	0409	PYS1	R/W	D1084				
D1035	41035	040A	PYS2	R/W	D1085				
D1036					D1086				
D1037					D1087				
D1038					D1088				
D1039					D1089				
D1040					D1090				
D1041					D1091				
D1042					D1092				
D1043					D1093				
D1044					D1094				
D1045					D1095				
D1046					D1096				
D1047					D1097				
D1048					D1098				
D1049					D1099				
D1050					D1100				

Area for I/O Configuration Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1101	41101	044C	C.S1	R/W	D1151	41151	047E	ADV	R/W
D1102	41102	044D	C.S2	R/W	D1152	41152	047F	A/M.1	R/W
D1103	41103	044E	C.S3	R/W	D1153	41153	0480	A/M.2	R/W
D1104	41104	044F	C.S4	R/W	D1154	41154	0481	LSP/CAS	R/W
D1105	41105	0450	C.S5	R/W	D1155	41155	0482	PTNO.b0	R/W
D1106	41106	0451	DO1	R/W	D1156	41156	0483	PTNO.b1	R/W
D1107	41107	0452	DO2	R/W	D1157	41157	0484	PTNO.b2	R/W
D1108	41108	0453	DO3	R/W	D1158	41158	0485	PTNO.b3	R/W
D1109	41109	0454	DO4	R/W	D1159	41159	0486	PTNO.b4	R/W
D1110	41110	0455	DO5	R/W	D1160	41160	0487	PTNO.b5	R/W
D1111	41111	0456	DO6	R/W	D1161	41161	0488	PTNO.b6	R/W
D1112	41112	0457	DO7	R/W	D1162	41162	0489	PTNO.b7	R/W
D1113	41113	0458	R151	R/W	D1163	41163	048A	PTNO.b8	R/W
D1114	41114	0459	R152	R/W	D1164	41164	048B	DP1	R/W
D1115	41115	045A	R153	R/W	D1165	41165	048C	DP2	R/W
D1116	41116	045B	R154	R/W	D1166	41166	048D	MG1	R/W
D1117	41117	045C	R155	R/W	D1167	41167	048E	MG2	R/W
D1118	41118	045D	R156	R/W	D1168	41168	048F	MG3	R/W
D1119	41119	045E	R157	R/W	D1169	41169	0490	MG4	R/W
D1120	41120	045F	R158	R/W	D1170	41170	0491	PYA1	R/W
D1121	41121	0460	R251	R/W	D1171	41171	0492	PYB1	R/W
D1122	41122	0461	R252	R/W	D1172	41172	0493	PYA2	R/W
D1123	41123	0462	R253	R/W	D1173	41173	0494	PYB2	R/W
D1124	41124	0463	R254	R/W	D1174				
D1125	41125	0464	R255	R/W	D1175				
D1126	41126	0465	R256	R/W	D1176				
D1127	41127	0466	R257	R/W	D1177				
D1128	41128	0467	R258	R/W	D1178				
D1129					D1179				
D1130					D1180				
D1131					D1181				
D1132					D1182				
D1133					D1183				
D1134					D1184				
D1135					D1185				
D1136					D1186				
D1137					D1187				
D1138					D1188				
D1139					D1189				
D1140					D1190				
D1141					D1191				
D1142					D1192				
D1143					D1193				
D1144					D1194				
D1145					D1195				
D1146					D1196				
D1147	41147	047A	PROG	R/W	D1197				
D1148	41148	047B	RESET	R/W	D1198				
D1149	41149	047C	LOCAL	R/W	D1199				
D1150	41150	047E	HOLD	R/W	D1200				

4.10.1 Data Area for Control Action Parameters

Register No.	Category	Description	Remarks
D0902 to D0906	SP-related parameters	SPT.1 to PT2.G	For details on the parameters, see the User s Manual of UP750/UP550.
D0907 to D0914	Event-related parameters	EHY1 to EHY8	
D0915 to D0923	Alarm setting parameters	AL1.1 to AMD.1	
D0926 to D0931	Control function setting parameters for Loop-1	OPR.1 to R.TM	
D0933, D0934	SP upper and lower limit parameters for Loop-1	SPH.1, SPL.1	
D0966 to D0968	Control function setting parameters for Loop-2	OPR.2 to AR.2	
D0973, D0974	SP upper and lower limit parameters for Loop-2	SPH.2, SPL.2	

4.10.2 Data Area for Loop-common Function Parameters

Register No.	Category	Description	Remarks
D1001 to D1004	Input computation setting parameters	A.BS1 to A.LC1	For details on the parameters, see the User s Manual of UP750/UP550.
D1005 to D1008		A.BS2 to A.LC2 (UT750 only)	
D1009 to D1012		A.BS3 to A.LC3	
D1013 to D1018	Retransmission output setting parameters	RET1 to RTL2	
D1021 to D1023	Deviation trend setting parameters	TSC1 to TTM TSC2 (UP750 only)	
D1024	Key-lock setting parameters	▲▼	
D1026 to D1035	Menu-lock setting parameters	PT.NO to PYS2	

4.10.3 Data Area for I/O Configuration Parameters

Register No.	Category	Description	Remarks
D1101 to D1105	SELECT display registration parameters	C.S1 to C.S5	For details on the parameters, see the User's Manual of UP750/UP550.
D1106 to D1112	Contact output flag configuration parameters	DO1 to DO7	
D1113 to D1128	R*** output flag configuration parameters	R151 to R258 (UP750 only)	
D1147 to D1169	Contact input configuration parameters	PROG to MG4; PTNO.b5 to DP2 are for UP750 only.	
D1170 to D1173	Ten-segment linearizer unit setting parameters	PYA1 to PYB2	

4.11 Controller Mode (UP mode), PV Input, and Control Output Parameters

Area for Controller Mode, PV Input, and Control Output Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1201	41201	04B0	IN1	R/W	D1251	41251	04E2	DLN1	R/W
D1202	41202	04B1	UNI1	R/W	D1252	41252	04E3	ADR1	R/W
D1203					D1253	41253	04E4	RP.T1	R/W
D1204	41204	04B3	RH1	R/W	D1254	41254	04E5	PSL2	R/W
D1205	41205	04B4	RL1	R/W	D1255	41255	04E6	BPS2	R/W
D1206	41206	04B5	SDP1	R	D1256	41256	04E7	PRI2	R/W
D1207	41207	04B6	SH1	R/W	D1257	41257	04E8	STP2	R/W
D1208	41208	04B7	SL1	R/W	D1258	41258	04E9	DLN2	R/W
D1209	41209	04B8	BSL1	R/W	D1259	41259	04EA	ADR2	R/W
D1210	41210	04B9	RJC1	R/W	D1260	41260	04EB	RP.T2	R/W
D1211	41211	04BA	IN2	R/W	D1261	41261	04EC	V.RS(UP550 only)	R/W
D1212	41212	04BB	UNI2	R/W	D1262	41262	04ED	V.L(UP550 only)	R/W
D1213					D1263	41263	04EE	V.H(UP550 only)	R/W
D1214	41214	04BD	RH2	R/W	D1264	41264	04EF	TR.T(UP550 only)	R/W
D1215	41215	04BE	RL2	R/W	D1265	41265	04F0	V.MOD(UP550 only)	R/W
D1216	41216	04BF	SDP2	R	D1266	41266	04F1	INIT	R/W
D1217	41217	04C0	SH2	R/W	D1267	41267	04E2	V.AT(UP550 only)	R/W
D1218	41218	04C1	SL2	R/W	D1268	41268	04E3	A1H(UP550 only)	R/W
D1219	41219	04C2	BSL2	R/W	D1269	41269	04E4	A1L(UP550 only)	R/W
D1220	41220	04C3	RJC2	R/W	D1270	41270	04E5	A2H(UP550 only)	R/W
D1221	41221	04C4	IN3	R/W	D1271	41271	04E6	A2L(UP550 only)	R/W
D1222	41222	04C5	UNI3	R/W	D1272	41272	04E7	A3H(UP550 only)	R/W
D1223					D1273	41273	04E8	A3L(UP550 only)	R/W
D1224	41224	04C7	RH3	R/W	D1274				
D1225	41225	04C8	RL3	R/W	D1275				
D1226	41226	04C9	SDP3	R	D1276				
D1227	41227	04CA	SH3	R/W	D1277				
D1228	41228	04CB	SL3	R/W	D1278				
D1229	41229	04CC	BSL3	R/W	D1279				
D1230	41230	04CD	P.UNI1	R/W	D1280	41280	04FF	UPM	R/W
D1231	41231	04CE	P.DP1	R/W	D1281	41281	0500	SMP	R/W
D1232	41232	04CF	P.RH1	R/W	D1282				
D1233	41233	04D0	P.RL1	R/W	D1283				
D1234	41234	04D1	P.UNI2	R/W	D1284				
D1235	41235	04D2	P.DP2	R/W	D1285				
D1236	41236	04D3	P.RH2	R/W	D1286				
D1237	41237	04D4	P.RL2	R/W	D1287				
D1238	41238	04D5	OT1	R/W	D1288				
D1239	41239	04D6	OT2	R/W	D1289				
D1240	41240	04D7	CT1	R/W	D1290				
D1241	41241	04D8	CT2	R/W	D1291				
D1242	41242	04D9	CTc1	R/W	D1292				
D1243	41243	04DA	CTc2	R/W	D1293				
D1244	41244	04DB	AO1	R/W	D1294				
D1245	41245	04DC	AO2	R/W	D1295				
D1246	41246	04DD	AO3	R/W	D1296				
D1247	41247	04DE	PSL1	R/W	D1297				
D1248	41248	04DF	BPS1	R/W	D1298				
D1249	41249	04E0	PRI1	R/W	D1299				
D1250	41250	04E1	STP1	R/W	D1300				

4.11.1 Data Area for Controller Mode (UP mode), PV Input, and Control Output Parameters

Register No.	Category	Description	Remarks
D1201 to D1210	PV input 1 parameters	IN1 to RJC1	SDP1 (D register number 1206) is not a parameter, and this register is read-only. For details on the parameters, see the User s Manual of UP750/UP550.
D1211 to D1220	PV input 2 parameters	IN2 to RJC2 (UP750 only)	SDP2 (D register number 1216) is not a parameter, and this register is read-only. For details on the parameters, see the User s Manual of UP750/UP550.
D1221 to D1229	PV input 3 parameters	IN3 to BSL3	SDP3 (D register number 1226) is not a parameter, and this register is read-only. For details on the parameters, see the User s Manual of UP750/UP550.
D1230 to D1233	PV input 1 parameters	P.UNI1 to P.RL1	For details on the parameters, see the User s Manual of UP750/UP550.
D1234 to D1237	PV input 2 parameters	P.UNI2 to P.RL2	
D1238 to D1246	Control output parameters	OT1 to AO3	
D1247 to D1260	RS-485 communication parameters	PSL to RP.T2; (PSL.2 to RP.T2 are for UP750 only)	
D1261 to D1265	Valve calibration parameters	V.RS to V.MOD (UP550 only)	
D1266	Parameter initialization	INIT	
D1267	Automatic valve adjustment	V.AT (UP550 only)	
D1268 to D1273	Analog output scales	A1H to A3L	
D1280	UP mode parameter	UPM	
D1281	Control period parameter	SMP	

4.12 Input Block Area for Custom Computation (UP750 only)

Area for Input Block (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1301	41301	0514	AIN1	R/W	D1351				
D1302	41302	0515	AIN2	R/W	D1352				
D1303	41303	0516	ANI3	R/W	D1353				
D1304					D1354				
D1305					D1355				
D1306					D1356				
D1307					D1357				
D1308					D1358				
D1309					D1359				
D1310					D1360				
D1311					D1361	41361	0550	PROG	R/W
D1312					D1362	41362	0551	RESET	R/W
D1313					D1363	41363	0552	LOCAL	R/W
D1314					D1364	41364	0553	HOLD	R/W
D1315					D1365	41365	0554	ADV	R/W
D1316					D1366	41366	0555	A/M.1	R/W
D1317					D1367	41367	0556	A/M.2	R/W
D1318					D1368	41368	0557	LSP/CAS	R/W
D1319					D1369	41369	0558	PTNO.b0	R/W
D1320					D1370	41370	0559	PTNO.b1	R/W
D1321					D1371	41371	055A	PTNO.b2	R/W
D1322					D1372	41372	055B	PTNO.b3	R/W
D1323					D1373	41373	055C	PTNO.b4	R/W
D1324					D1374	41374	055D	PTNO.b5	R/W
D1325					D1375	41375	055E	PTNO.b6	R/W
D1326					D1376	41376	055F	PTNO.b7	R/W
D1327					D1377	41377	0560	PTNO.b8	R/W
D1328					D1378	41378	0561	DP1	R/W
D1329					D1379	41379	0562	DP2	R/W
D1330					D1380	41380	0563	MG1	R/W
D1331	41331	0532	PVIN.1	R/W	D1381	41381	0564	MG2	R/W
D1332	41332	0533	PVIN.2	R/W	D1382	41382	0565	MG3	R/W
D1333	41333	0534	RSPIN.1	R/W	D1383	41383	0566	MG4	R/W
D1334	41334	0535	RSPIN.2	R/W	D1384				
D1335	41335	0536	GAIN.1	R/W	D1385				
D1336	41336	0537	GAIN.2	R/W	D1386				
D1337	41337	0538	TRG.1	R/W	D1387				
D1338	41338	0539	TRG.2	R/W	D1388				
D1339	41339	053A	TRF.1	R/W	D1389				
D1340	41340	053B	TRF.2	R/W	D1390				
D1341					D1391				
D1342					D1392				
D1343					D1393				
D1344					D1394				
D1345					D1395				
D1346					D1396				
D1347					D1397				
D1348					D1398				
D1349					D1399				
D1350					D1400				

Area for Input Block (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1401	41401	0578	MO1L	R/W	D1451	41451	05AA	MO26L	R/W
D1402	41402	0579	MO1H	R/W	D1452	41452	05AB	MO26H	R/W
D1403	41403	057A	MO2L	R/W	D1453	41453	05AC	MO27L	R/W
D1404	41404	057B	MO2H	R/W	D1454	41454	05AD	MO27H	R/W
D1405	41405	057C	MO3L	R/W	D1455	41455	05AE	MO28L	R/W
D1406	41406	057D	MO3H	R/W	D1456	41456	05AF	MO28H	R/W
D1407	41407	057E	MO4L	R/W	D1457	41457	05B0	MO29L	R/W
D1408	41408	057F	MO4H	R/W	D1458	41458	05B1	MO29H	R/W
D1409	41409	0580	MO5L	R/W	D1459	41459	05B2	MO30L	R/W
D1410	41410	0581	MO5H	R/W	D1460	41460	05B3	MO30H	R/W
D1411	41411	0582	MO6L	R/W	D1461	41461	05B4	MO31L	R/W
D1412	41412	0583	MO6H	R/W	D1462	41462	05B5	MO31H	R/W
D1413	41413	0584	MO7L	R/W	D1463	41463	05B6	MO32L	R/W
D1414	41414	0585	MO7H	R/W	D1464	41464	05B7	MO32H	R/W
D1415	41415	0586	MO8L	R/W	D1465	41465	05B8	MO33L	R/W
D1416	41416	0587	MO8H	R/W	D1466	41466	05B9	MO33H	R/W
D1417	41417	0588	MO9L	R/W	D1467	41467	05BA	MO34L	R/W
D1418	41418	0589	MO9H	R/W	D1468	41468	05BB	MO34H	R/W
D1419	41419	058A	MO10L	R/W	D1469	41469	05BC	MO35L	R/W
D1420	41420	058B	MO10H	R/W	D1470	41470	05BD	MO35H	R/W
D1421	41421	058C	MO11L	R/W	D1471	41471	05BE	MO36L	R/W
D1422	41422	058D	MO11H	R/W	D1472	41472	05BF	MO36H	R/W
D1423	41423	058E	MO12L	R/W	D1473	41473	05C0	MO37L	R/W
D1424	41424	058F	MO12H	R/W	D1474	41474	05C1	MO37H	R/W
D1425	41425	0590	MO13L	R/W	D1475	41475	05C2	MO38L	R/W
D1426	41426	0591	MO13H	R/W	D1476	41476	05C3	MO38H	R/W
D1427	41427	0592	MO14L	R/W	D1477	41477	05C4	MO39L	R/W
D1428	41428	0593	MO14H	R/W	D1478	41478	05C5	MO39H	R/W
D1429	41429	0594	MO15L	R/W	D1479	41479	05C6	MO40L	R/W
D1430	41430	0595	MO15H	R/W	D1480	41480	05C7	MO40H	R/W
D1431	41431	0596	MO16L	R/W	D1481	41481	05C8	MO41L	R/W
D1432	41432	0597	MO16H	R/W	D1482	41482	05C9	MO41H	R/W
D1433	41433	0598	MO17L	R/W	D1483	41483	05CA	MO42L	R/W
D1434	41434	0599	MO17H	R/W	D1484	41484	05CB	MO42H	R/W
D1435	41435	059A	MO18L	R/W	D1485	41485	05CC	MO43L	R/W
D1436	41436	059B	MO18H	R/W	D1486	41486	05CD	MO43H	R/W
D1437	41437	059C	MO19L	R/W	D1487	41487	05CE	MO44L	R/W
D1438	41438	059D	MO19H	R/W	D1488	41488	05CF	MO44H	R/W
D1439	41439	059E	MO20L	R/W	D1489	41489	05D0	MO45L	R/W
D1440	41440	059F	MO20H	R/W	D1490	41490	05D1	MO45H	R/W
D1441	41441	05A0	MO21L	R/W	D1491	41491	05D2	MO46L	R/W
D1442	41442	05A1	MO21H	R/W	D1492	41492	05D3	MO46H	R/W
D1443	41443	05A2	MO22L	R/W	D1493	41493	05D4	MO47L	R/W
D1444	41444	05A3	MO22H	R/W	D1494	41494	05D5	MO47H	R/W
D1445	41445	05A4	MO23L	R/W	D1495	41495	05D6	MO48L	R/W
D1446	41446	05A5	MO23H	R/W	D1496	41496	05D7	MO48H	R/W
D1447	41447	05A6	MO24L	R/W	D1497	41497	05D8	MO49L	R/W
D1448	41448	05A7	MO24H	R/W	D1498	41498	05D9	MO49H	R/W
D1449	41449	05A8	MO25L	R/W	D1499	41499	05DA	MO50L	R/W
D1450	41450	05A9	MO25H	R/W	D1500	41500	05DB	MO50H	R/W

4.13 Output Block Area for Custom Computation (UP750 only)

Area for Output Block (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1501	41501	0578	PV.1	R/W	D1551	41551	05AA	R251	R/W
D1502	41502	0579	PV.2	R/W	D1552	41552	05AB	R252	R/W
D1503	41503	057A	CSP.1	R/W	D1553	41553	05AC	R253	R/W
D1504	41504	057B	CSP.2	R/W	D1554	41554	05AD	R254	R/W
D1505	41505	057C	OUT.1	R/W	D1555	41555	05AE	R255	R/W
D1506	41506	057D	OUT.2	R/W	D1556	41556	05AF	R256	R/W
D1507	41507	057E	HOUT.1	R/W	D1557	41557	05B0	R257	R/W
D1508	41508	057F	HOUT.2	R/W	D1558	41558	05B1	R258	R/W
D1509	41509	0580	COUT.1	R/W	D1559				
D1510	41510	0581	COUT.2	R/W	D1560				
D1511	41511	0582	RET1	R/W	D1561				
D1512	41512	0583	RET2	R/W	D1562				
D1513					D1563				
D1514					D1564				
D1515					D1565				
D1516					D1566				
D1517					D1567				
D1518					D1568				
D1519					D1569				
D1520					D1570				
D1521					D1571				
D1522					D1572				
D1523					D1573				
D1524					D1574				
D1525					D1575				
D1526					D1576				
D1527					D1577				
D1528					D1578				
D1529					D1579				
D1530					D1580				
D1531	41531	0596	OUT1A		D1581				
D1532	41532	0597	OUT2A	R/W	D1582				
D1533	41533	0598	OUT3A	R/W	D1583				
D1534	41534	0599	OUT1R	R/W	D1584				
D1535	41535	059A	OUT2R	R/W	D1585				
D1536	41536	059B	DO1	R/W	D1586				
D1537	41537	059C	DO2	R/W	D1587				
D1538	41538	059D	DO3	R/W	D1588				
D1539	41539	059E	DO4	R/W	D1589				
D1540	41540	059F	DO5	R/W	D1590				
D1541	41541	05A0	DO6	R/W	D1591				
D1542	41542	05A1	DO7	R/W	D1592				
D1543	41543	05A2	R151	R/W	D1593				
D1544	41544	05A3	R152	R/W	D1594				
D1545	41545	05A4	R153	R/W	D1595				
D1546	41546	05A5	R154	R/W	D1596				
D1547	41547	05A6	R155	R/W	D1597				
D1548	41548	05A7	R156	R/W	D1598				
D1549	41549	05A8	R157	R/W	D1599				
D1550	41550	05A9	R158	R/W	D1600				

Area for Output Block (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1601	41601	0640	MO1L	R/W	D1651	41651	0672	MO26L	R/W
D1602	41602	0641	MO1	R/W	D1652	41652	0673	MO26H	R/W
D1603	41603	0642	MO2L	R/W	D1653	41653	0674	MO27L	R/W
D1604	41604	0643	MO2H	R/W	D1654	41654	0675	MO27H	R/W
D1605	416505	0644	MO3L	R/W	D1655	41655	0676	MO28L	R/W
D1606	41606	0645	MO3H	R/W	D1656	41656	0677	MO28H	R/W
D1607	41607	0646	MO4L	R/W	D1657	41657	0678	MO29L	R/W
D1608	41608	0647	MO4H	R/W	D1658	41658	0679	MO29H	R/W
D1609	41609	0648	MO5L	R/W	D1659	41659	067A	MO30L	R/W
D1610	41610	0649	MO5H	R/W	D1660	41660	067B	MO30H	R/W
D1611	41611	064A	MO6L	R/W	D1661	41661	067C	MO31L	R/W
D1612	41612	064B	MO6H	R/W	D1662	41662	067D	MO31H	R/W
D1613	41613	064C	MO7L	R/W	D1663	41663	067E	MO32L	R/W
D1614	41614	064D	MO7H	R/W	D1664	41664	067F	MO32H	R/W
D1615	41615	064E	MO8L	R/W	D1665	41665	0680	MO33L	R/W
D1616	41616	064F	MO8H	R/W	D1666	41666	0681	MO33H	R/W
D1617	41617	0650	MO9L	R/W	D1667	41667	0682	MO34L	R/W
D1618	41618	0651	MO9H	R/W	D1668	41668	0683	MO34H	R/W
D1619	41619	0652	MO10L	R/W	D1669	41669	0684	MO35L	R/W
D1620	41620	0653	MO10H	R/W	D1670	41670	0685	MO35H	R/W
D1621	41621	0654	MO11L	R/W	D1671	41671	0686	MO36L	R/W
D1622	41622	0655	MO11H	R/W	D1672	41672	0687	MO36H	R/W
D1623	41623	0656	MO12L	R/W	D1673	41673	0688	MO37L	R/W
D1624	41624	0657	MO12H	R/W	D1674	41674	0689	MO37H	R/W
D1625	41625	0658	MO13L	R/W	D1675	41675	068A	MO38L	R/W
D1626	41626	0659	MO13H	R/W	D1676	41676	068B	MO38H	R/W
D1627	41627	065A	MO14L	R/W	D1677	41677	068C	MO39L	R/W
D1628	41628	065B	MO14H	R/W	D1678	41678	068D	MO39H	R/W
D1629	41629	065C	MO15L	R/W	D1679	41679	068E	MO40L	R/W
D1630	41630	065D	MO15H	R/W	D1680	41680	068F	MO40H	R/W
D1631	41631	065E	MO16L	R/W	D1681	41681	0690	MO41L	R/W
D1632	41632	065F	MO16H	R/W	D1682	41682	0691	MO41H	R/W
D1633	41633	0660	MO17L	R/W	D1683	41683	0692	MO42L	R/W
D1634	41634	0661	MO17H	R/W	D1684	41684	0693	MO42H	R/W
D1635	41635	0662	MO18L	R/W	D1685	41685	0694	MO43L	R/W
D1636	41636	0663	MO18H	R/W	D1686	41686	0695	MO43H	R/W
D1637	41637	0664	MO19L	R/W	D1687	41687	0696	MO44L	R/W
D1638	41638	0665	MO19H	R/W	D1688	41688	0697	MO44H	R/W
D1639	41639	0666	MO20L	R/W	D1689	41689	0698	MO45L	R/W
D1640	41640	0667	MO20H	R/W	D1690	41690	0699	MO45H	R/W
D1641	41641	0668	MO21L	R/W	D1691	41691	069A	MO46L	R/W
D1642	41642	0669	MO21H	R/W	D1692	41692	069B	MO46H	R/W
D1643	41643	066A	MO22L	R/W	D1693	41693	069C	MO47L	R/W
D1644	41644	066B	MO22H	R/W	D1694	41694	069D	MO47H	R/W
D1645	41645	066C	MO23L	R/W	D1695	41695	069E	MO48L	R/W
D1646	41646	066D	MO23H	R/W	D1696	41696	069F	MO48H	R/W
D1647	41647	066E	MO24L	R/W	D1697	41697	06A0	MO49L	R/W
D1648	41648	066F	MO24H	R/W	D1698	41698	06A1	MO49H	R/W
D1649	41649	0670	MO25L	R/W	D1699	41699	06A2	MO50L	R/W
D1650	41650	0671	MO25H	R/W	D1700	41700	06A3	MO50H	R/W

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5. Functions and Use of D Registers (UP350/UP351)

5.1 Overview

This section explains the functions and use of D registers.

D registers store parameter data, flag data and process data of the GREEN Series controller. You can readily use these internal data items by reading from or writing to the D registers.

You can use D registers to perform:

- **Centralized control using a higher-level device**
- **Data exchange by reading/writing data from/to a higher-level device**

5.2 Interpretation of D Register Tables

This section explains how to read the D Register Map tables in this chapter. The numbers listed in the leftmost column are D register numbers ((1) below). The five-digit numbers in the next column are reference numbers used for MODBUS communication ((2) below). The numbers in the column third from left are register numbers in hexadecimal notation used in MODBUS communication programs ((3) below). Each register code name in the D Register Map tables represents a specific process data item, operation parameter, setup parameter or other data items such as a flag. For details on the operation parameters and setup parameters, see the user's manual of UP350/UP351.

Name of D Register Map				
D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R

(1) D register number

(2) Reference number (for MODBUS communication)

(3) Hex number (for MODBUS communication program)

Permission of read/write by communication

An asterisk (*) in this column indicates that the number of writing actions is limited to 100,000.

■ Names of D Registers

The base names of some D registers are preceded by a combination of a number and then a period as shown in the format Y.□□□. (Y: group number)

Examples:

- The name 3.P means the P of group 3.

5.3 Classification of D Registers

■ Classification of D Register Map Tables

The table below outlines how the D registers are classified by their numbers in the D Register Map tables.

Table 5.1 Classification of D Registers

Register No.	Area and data categories		Description	Reference
D0001 to D0049	Process data area (Note 1)	Data displayed for operation	PV, SP, OUT, and others	Section 5.4
D0050 to D0100	User area (Note 2), represented by shaded cells in the table		If a graphic panel is used, this area is used for communication with the graphic panel.	Section 5.4
D0101 to D0200	Program area	Program 1 parameters	AL, SSP, TM, and others	Section 5.5
		Program 2 parameters		
D0201 to D0230	Operation parameters (Note 1)	Operation mode parameters	HOLD, ADV, and others	Section 5.6
D0231 to D0300		Computation parameters	AT, SC, BS, FL, and others	Sections 5.6
D0301 to D0500		PID parameters	P, I, D, and others	Sections 5.7
D0501 to D0900	Cannot be used			
D0901 to D1000	Setup parameters (Note 1)	Control action parameters	TMU, C.MD	Section 5.8
D1001 to D1100		Common function parameters	RET, LOCK	Section 5.8
D1101 to D1200		SELECT display registration parameters	CS	Section 5.8
D1201 to D1300		PV input, control output, and communication parameters	IN, OT, PSL	Section 5.9

Note 1: Data for process values, operation parameters and setup parameters are stored in the types (PV input range, PV input range span, %, or ABS without the decimal point) indicated in the Operation Parameter Lists and Setup Parameter Lists of the user s manual of UP350/UP351. The OFF and ON states are represented by 0 and 1, respectively. D registers D0001 to D0049 are read-only.

Note 2: When communicating with a graphic panel, do not write to or read from this area (D0050 to D0100) because this area is reserved for 16-bit register data used by graphic panels.

[See Also] Section 5.4, Process Data and User Area

NOTE

It is prohibited to read/write data by communication from/to the registers of blank cells in the register map tables. If you attempt to do so, the UP350/UP351 may not operate properly.

5.4 Process Data and User Area

Area for Process Data									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R	D0051	40051	0032		R/W
D0002	40002	0001	ERROR	R	D0052	40052	0033		R/W
D0003	40003	0002	PV	R	D0053	40053	0034		R/W
D0004	40004	0003	CSP	R	D0054	40054	0035		R/W
D0005	40005	0004	OUT	R	D0055	40055	0036		R/W
D0006					D0056	40056	0037		R/W
D0007					D0057	40057	0038		R/W
D0008	40008	0007	MOD	R	D0058	40058	0039		R/W
D0009	40009	0008	PIDNO	R	D0059	40059	003A		R/W
D0010					D0060	40060	003B		R/W
D0011					D0061	40061	003C		R/W
D0012	40012	000B	PVE	R	D0062	40062	003D		R/W
D0013	40013	000C	TIME	R	D0063	40063	003E		R/W
D0014					D0064	40064	003F		R/W
D0015					D0065	40065	0040		R/W
D0016	40016	000F	SEGNO	R	D0066	40066	0041		R/W
D0017	40017	0010	TIME	R	D0067	40067	0042		R/W
D0018					D0068	40068	0043		R/W
D0019					D0069	40069	0044		R/W
D0020					D0070	40070	0045		R/W
D0021					D0071	40071	0046		R/W
D0022					D0072	40072	0047		R/W
D0023					D0073	40073	0048		R/W
D0024					D0074	40074	0049		R/W
D0025					D0075	40075	004A		R/W
D0026					D0076	40076	004B		R/W
D0027					D0077	40077	004C		R/W
D0028					D0078	40078	004D		R/W
D0029					D0079	40079	004E		R/W
D0030					D0080	40080	004F		R/W
D0031					D0081	40081	0050		R/W
D0032					D0082	40082	0051		R/W
D0033					D0083	40083	0052		R/W
D0034					D0084	40084	0053		R/W
D0035	40035	0022	PARAERR	R	D0085	40085	0054		R/W
D0036					D0086	40086	0055		R/W
D0037					D0087	40087	0056		R/W
D0038					D0088	40088	0057		R/W
D0039					D0089	40089	0058		R/W
D0040					D0090	40090	0059		R/W
D0041					D0091	40091	005A		R/W
D0042					D0092	40092	005B		R/W
D0043					D0093	40093	005C		R/W
D0044					D0094	40094	005D		R/W
D0045					D0095	40095	005E		R/W
D0046					D0096	40096	005F		R/W
D0047					D0097	40097	0060		R/W
D0048					D0098	40098	0061		R/W
D0049					D0099	40099	0062		R/W
D0050	40050	0031		R/W	D0100	40100	0063		R/W

Shaded area : User area (You cannot use these registers when a graphic panel is used.)

5.4.1 Process Data Area (Read-only)

Some of the registers in this area (D0001 to D0049, read-only) are designed to represent two or more events, such as errors and statuses, using combinations of bits within the register. If any of the events shown in the following tables occur, the corresponding bit is set to 1. The bit remains 0 if the event does not occur. Note that bits with blank fields in the tables are not in use.

● Bit Configuration of D0001: ADERROR (Input Error)

Bit	Code	Event
0	ADERR.st	Input A/D converter error
1 to 15		

● Bit Configuration of D0002: ERROR (PV Error)

Bit	Code	Event
0		
1	PVBO.st	PV burnout error
2	RJCERR.st	PV RJC error
3		
4	PV+over.st	PV over-scale
5	PV-over.st	PV under-scale
6 to 13		
14	ATERR.st	Auto-tuning error
15		

● D0003: PV (Measured input value)

● D0004: CSP (Current target setpoint [SP])

● D0005: OUT (Control output value [OUT])

- During PID computation, you can read the computation result as is from this register. For example, when the computation result is 75.0%, the register contains a value of “750.”
- During on-off computation, the register contains “0” (0.0%) for the OFF state or “1000” (100.0%) for the ON state.
- During heating/cooling computation, this register contains the value of the PID computation result.

● Bit Configuration of D0008: MOD (Operation mode)

Bit	Code	Event
0 to 7		
8	RESET.st	1: Program reset
9	PROG1.st	1: Program 1 operation
10	PROG2.st	1: Program 2 operation
11		
12	HOLD.st	1: Pause
13	WAIT.st	1: Wait
14	AT1.st	0: Auto-tuning is OFF; 1: Auto-tuning is ON
15		

● Bit Configuration of D0035: PARAERR (Error in calibration values and parameters)

Bit	Code	Event
0	CALB.E.st	Calibration value error
1 to 5		
6	SETUP.st	Setup parameter error
7		
8	PARA.E.st	Operation parameter error
9	MODE.E.st	Error in power-failure backup data
10, 11		
12	EEP.E.st	EEPROM error
13		
14	SYSTEM.E.st	System data error
15		

5.4.2 User Area

Register No.	Category	Description
D0050 to D0100	User area	Users can read/write data from/to the registers in this area. However, if a graphic panel is used in the system, users cannot use this area.

5.5 Program Parameters

Program Area									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0101					D0151	40151	0096	1.SP7	*R/W
D0102					D0152	40152	0097	1.TM7	*R/W
D0103					D0153	40153	0098	1.SP8	*R/W
D0104					D0154	40154	0099	1.TM8	*R/W
D0105					D0155	40155	009A	1.SP9	*R/W
D0106					D0156	40156	009B	1.TM9	*R/W
D0107					D0157	40157	009C	1.SPA	*R/W
D0108					D0158	40158	009D	1.TMA	*R/W
D0109					D0159	40159	009E	1.JC	*R/W
D0110					D0160				
D0111					D0161	40161	00A0	2.AL1	*R/W
D0112					D0162	40162	00A1	2.A1	*R/W
D0113					D0163	40163	00A2	2.AL2	*R/W
D0114					D0164	40164	00A3	2.A2	*R/W
D0115					D0165	40165	00A4	2.EON	*R/W
D0116					D0166	40166	00A5	2.EOF	*R/W
D0117					D0167	40167	00A6	2.SSP	*R/W
D0118					D0168	40168	00A7	2.STC	*R/W
D0119					D0169	40169	00A8	2.SP1	*R/W
D0120					D0170	40170	00A9	2.TM1	*R/W
D0121					D0171	40171	00AA	2.SP2	*R/W
D0122					D0172	40172	00AB	2.TM2	*R/W
D0123					D0173	40173	00AC	2.SP3	*R/W
D0124					D0174	40174	00AD	2.TM3	*R/W
D0125					D0175	40175	00AE	2.SP4	*R/W
D0126					D0176	40176	00AF	2.TM4	*R/W
D0127					D0177	40177	00B0	2.SP5	*R/W
D0128					D0178	40178	00B1	2.TM5	*R/W
D0129					D0179	40179	00B2	2.SP6	*R/W
D0130					D0180	40180	00B3	2.TM6	*R/W
D0131	40131	0082	1.AL1	*R/W	D0181	40181	00B4	2.SP7	*R/W
D0132	40132	0083	1.A1	*R/W	D0182	40182	00B5	2.TM7	*R/W
D0133	40133	0084	1.AL2	*R/W	D0183	40183	00B6	2.SP8	*R/W
D0134	40134	0085	1. A2	*R/W	D0184	40184	00B7	2.TM8	*R/W
D0135	40135	0086	1.EON	*R/W	D0185	40185	00B8	2.SP9	*R/W
D0136	40136	0087	1.EOF	*R/W	D0186	40186	00B9	2.TM9	*R/W
D0137	40137	0088	1.SSP	*R/W	D0187	40187	00BA	2.SPA	*R/W
D0138	40138	0089	1.STC	*R/W	D0188	40188	00BB	2.TMA	*R/W
D0139	40139	008A	1.SP1	*R/W	D0189	40189	00BC	2.JC	*R/W
D0140	40140	008B	1.TM1	*R/W	D0190				
D0141	40141	008C	1.SP2	*R/W	D0191				
D0142	40142	008D	1.TM2	*R/W	D0192				
D0143	40143	008E	1.SP3	*R/W	D0193				
D0144	40144	008F	1.TM3	*R/W	D0194				
D0145	40145	0090	1.SP4	*R/W	D0195				
D0146	40146	0091	1.TM4	*R/W	D0196				
D0147	40147	0092	1.SP5	*R/W	D0197				
D0148	40148	0093	1.TM5	*R/W	D0198				
D0149	40149	0094	1.SP6	*R/W	D0199				
D0150	40150	0095	1.TM6	*R/W	D0200				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

5.6 Operation Mode and Computation Parameters

Area for Operation Mode and Computation Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0201					D0251				
D0202					D0252				
D0203					D0253				
D0204					D0254	40254	00FD	OH	*R/W
D0205					D0255	40255	00FE	OL	*R/W
D0206					D0256	40256	00FF	HYS	*R/W
D0207					D0257	40257	0100	DR	*R/W
D0208	40208	00CF	R/P1/P2	R/W	D0258				
D0209	40209	00B0	HOLD	R/W	D0259				
D0210	40210	00B1	ADV	R/W	D0260	40260	0103	WIT.Z	*R/W
D0211					D0261	40261	0104	WIT.T	*R/W
D0212					D0262				
D0213					D0263				
D0214					D0264				
D0215					D0265				
D0216					D0266				
D0217					D0267				
D0218					D0268				
D0219					D0269				
D0220					D0270				
D0221	40221	00DC	HOLDSP	R/W	D0271				
D0222					D0272				
D0223	40223	00DE	HOLDTM	R/W	D0273				
D0224					D0274				
D0225					D0275				
D0226					D0276				
D0227					D0277				
D0228					D0278				
D0229					D0279				
D0230					D0280				
D0231					D0281				
D0232					D0282				
D0233					D0283				
D0234					D0284				
D0235					D0285				
D0236					D0286				
D0237	40237	00EC	PCCH (NOTE)	*R/W	D0287				
D0238	40238	00ED	PCCL (NOTE)	*R/W	D0288				
D0239					D0289				
D0240					D0290				
D0241	40241	00F0	AT	*R/W	D0291				
D0242	40242	00F1	SC	*R/W	D0292				
D0243	40243	00F2	BS	*R/W	D0293				
D0244	40244	00F3	FL	*R/W	D0294				
D0245					D0295				
D0246					D0296				
D0247					D0297				
D0248					D0298				
D0249					D0299				
D0250					D0300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

NOTE : Parameters PCCH and PCCL are used for UP351 only.

5.6.1 Operation Mode Information

The mode registers listed below are designed to show, by the value contained, which mode is selected.

You can change the mode by writing a different mode into the register via communication.

● D0208: R/P1/P2 (Program reset/Program modes)

When D0208 = 1, program operation is reset.

When D0208 = 2, program 1 operation.

When D0208 = 3, program 2 operation.

● D0209: HOLD (Program operation in HOLD state)

When D0209 = 0, program operation is in progress.

When D0209 = 1, program operation is paused.

● D0210: ADV (Forced segment advance)

When D0210 = 0, segment has been advanced or not advanced yet.

When D0210 = 1, advance one segment.

5.6.2 Write-only Data Area

The registers listed below are write-only registers that are accessed by a higher-level device.

Register No.	Code	Description
D0221	HOLDSP	Used to set SP for HOLD state.
D0223	HOLDTM	Used to set HOLD time.

5.6.3 Data Area for Computation Parameters

Register No.	Category	Description	Remarks
D0237, D0238	PV color change parameters	PCCH: High limit for PV color change PCCL: Low limit for PV color change	For details on the parameters, see the User's Manual of UP350/UP351. Parameters PCCH and PCCL are used for UP351 only.
D0241 to D0261	Computation parameters	AT: Auto-tuning selection SC: SUPER function selection BS: PV bias FL: PV filter OH: Upper limit of output OL: Lower limit of output HYS: Hysteresis for on-off control DR: Direct/reverse action switchover WIT.Z: Wait zone WIT.T: Wait time	

5.7 PID Parameters

Area for PID Parameters (1/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0301					D0351				
D0302					D0352				
D0303					D0353				
D0304					D0354				
D0305					D0355				
D0306	40306	0131	1.P	*R/W	D0356	40356	0163	3.P	*R/W
D0307	40307	0132	1.I	*R/W	D0357	40357	0164	3.I	*R/W
D0308	40308	0133	1.D	*R/W	D0358	40358	0165	3.D	*R/W
D0309					D0359				
D0310					D0360				
D0311	40311	0136	1.MR	*R/W	D0361	40361	0168	3.MR	*R/W
D0312					D0362				
D0313					D0363				
D0314					D0364				
D0315					D0365				
D0316					D0366				
D0317					D0367				
D0318					D0368				
D0319	40319	013E	1.RP	*R/W	D0369				
D0320					D0370				
D0321					D0371				
D0322					D0372				
D0323					D0373				
D0324					D0374				
D0325					D0375				
D0326					D0376				
D0327					D0377				
D0328					D0378				
D0329					D0379				
D0330					D0380				
D0331	40331	014A	2.P	*R/W	D0381	40381	017C	4.P	*R/W
D0332	40332	014B	2.I	*R/W	D0382	40382	017D	4.I	*R/W
D0333	40333	014C	2.D	*R/W	D0383	40383	017E	4.D	*R/W
D0334					D0384				
D0335					D0385				
D0336	40336	014F	2.MR	*R/W	D0386	40386	0181	4.MR	*R/W
D0337					D0387				
D0338					D0388				
D0339					D0389				
D0340					D0390				
D0341					D0391				
D0342					D0392				
D0343					D0393				
D0344	40344	0157	2.RP	*R/W	D0394				
D0345					D0395				
D0346					D0396				
D0347					D0397				
D0348					D0398				
D0349					D0399				
D0350					D0400				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

Area for PID Parameters (2/2)									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0401					D0451				
D0402					D0452				
D0403					D0453				
D0404					D0454				
D0405					D0455				
D0406					D0456				
D0407					D0457				
D0408					D0458				
D0409					D0459				
D0410					D0460				
D0411					D0461				
D0412					D0462				
D0413					D0463				
D0414					D0464				
D0415					D0465				
D0416					D0466				
D0417					D0467				
D0418					D0468				
D0419					D0469				
D0420					D0470				
D0421					D0471				
D0422					D0472				
D0423					D0473				
D0424					D0474				
D0425					D0475				
D0426					D0476				
D0427					D0477				
D0428					D0478				
D0429					D0479				
D0430					D0480				
D0431					D0481				
D0432					D0482				
D0433					D0483				
D0434					D0484				
D0435					D0485				
D0436					D0486				
D0437					D0487				
D0438					D0488				
D0439					D0489				
D0440					D0490				
D0441					D0491				
D0442					D0492				
D0443					D0493				
D0444					D0494	40494	01ED	RDV	*R/W
D0445					D0495				
D0446					D0496				
D0447					D0497				
D0448					D0498				
D0449					D0499				
D0450					D0500				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

5.7.1 Data Area for PID Parameters

Register No.	Category	Description	Remarks
D0306 to D0319	Group-1 parameters	1.P: Proportional band 1.I: Integral time 1.D: Derivative time 1.MR:Manual reset 1.RP: Zone PID reference point	Selecting a PID number enables a parameter group with the same number to be used. For example, if you set the PID number selection parameter (PIDNO) to 2, the parameters from 2.P through 2.RP are used. For details on the parameters, see the User's Manual of UP350/UP351.
D0331 to D0344	Group-2 parameters	The parameters from 2.P to 2.RP are functionally the same as their corresponding group-1 parameters.	
D0356 to D0361	Group-3 parameters	The parameters from 3.P to 3.MR are functionally the same as their corresponding group-1 parameters.	
D0381 to D0386	Group-4 parameters	The parameters from 4.P to 4.MR are functionally the same as their corresponding group-1 parameters.	
D0494	PID switching parameter	RDV: Zone PID reference deviation	

5.8 Control Action, Common Function, and SELECT Display Registration Parameters

Area for Control Action Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0901					D0951				
D0902					D0952				
D0903					D0953				
D0904	40904	0387	TMU	*R/W	D0954				
D0905	40905	0388	SEG.T	*R/W	D0955				
D0906					D0956				
D0907					D0957				
D0908					D0958				
D0909					D0959				
D0910					D0960				
D0911					D0961				
D0912					D0962				
D0913					D0963				
D0914					D0964				
D0915					D0965				
D0916					D0966				
D0917					D0967				
D0918					D0968				
D0919	40919	0396	HY1	*R/W	D0969				
D0920	40920	0397	HY2	*R/W	D0970				
D0921					D0971				
D0922					D0972				
D0923					D0973				
D0924	40924	039B	PO	*R/W	D0974				
D0925					D0975				
D0926					D0976				
D0927	40927	039E	C.MD	*R/W	D0977				
D0928	40928	039F	AR	*R/W	D0978				
D0929					D0979				
D0930					D0980				
D0931					D0981				
D0932	40932	03A3	DIS	*R/W	D0982				
D0933					D0983				
D0934					D0984				
D0935					D0985				
D0936					D0986				
D0937					D0987				
D0938					D0988				
D0939					D0989				
D0940					D0990				
D0941					D0991				
D0942					D0992				
D0943					D0993				
D0944					D0994				
D0945					D0995				
D0946					D0996				
D0947					D0997				
D0948					D0998				
D0949					D0999				
D0950					D1000				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

Area for Common Function Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1001					D1051				
D1002					D1052				
D1003					D1053				
D1004					D1054				
D1005					D1055				
D1006					D1056				
D1007					D1057				
D1008					D1058				
D1009					D1059				
D1010					D1060				
D1011					D1061				
D1012					D1062				
D1013	41013	03F4	RET	*R/W	D1063				
D1014	41014	03F5	RTH	*R/W	D1064				
D1015	41015	03F6	RTL	*R/W	D1065				
D1016					D1066				
D1017					D1067				
D1018					D1068				
D1019					D1069				
D1020					D1070				
D1021					D1071				
D1022					D1072				
D1023					D1073				
D1024					D1074				
D1025					D1075				
D1026					D1076				
D1027					D1077				
D1028					D1078				
D1029					D1079				
D1030					D1080				
D1031					D1081				
D1032					D1082				
D1033					D1083				
D1034					D1084				
D1035					D1085				
D1036	41036	040B	LOCK	R	D1086				
D1037	41037	040C	PCMD (NOTE)	*R/W	D1087				
D1038	41038	040D	ERJC (NOTE)	*R/W	D1088				
D1039					D1089				
D1040					D1090				
D1041					D1091				
D1042					D1092				
D1043					D1093				
D1044					D1094				
D1045					D1095				
D1046					D1096				
D1047					D1097				
D1048					D1098				
D1049					D1099				
D1050					D1100				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

NOTE : Parameters PCMD and ERJC are used for UP351 only.

Area for SELECT Display Registration Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1101	41101	044C	C.S1	*R/W	D1151				
D1102	41102	044D	C.S2	*R/W	D1152				
D1103	41103	044E	C.S3	*R/W	D1153				
D1104	41104	044F	C.S4	*R/W	D1154				
D1105					D1155				
D1106					D1156				
D1107					D1157				
D1108					D1158				
D1109					D1159				
D1110					D1160				
D1111					D1161				
D1112					D1162				
D1113					D1163				
D1114					D1164				
D1115					D1165				
D1116					D1166				
D1117					D1167				
D1118					D1168				
D1119					D1169				
D1120					D1170				
D1121					D1171				
D1122					D1172				
D1123					D1173				
D1124					D1174				
D1125					D1175				
D1126					D1176				
D1127					D1177				
D1128					D1178				
D1129					D1179				
D1130					D1180				
D1131					D1181				
D1132					D1182				
D1133					D1183				
D1134					D1184				
D1135					D1185				
D1136					D1186				
D1137					D1187				
D1138					D1188				
D1139					D1189				
D1140					D1190				
D1141					D1191				
D1142					D1192				
D1143					D1193				
D1144					D1194				
D1145					D1195				
D1146					D1196				
D1147					D1197				
D1148					D1198				
D1149					D1199				
D1150					D1200				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

5.8.1 Data Area for Control Action Parameters

Register No.	Category	Description	Remarks
D0904	Program time unit parameter	TMU	For details on the parameters, see the User's Manual of UP350/UP351.
D0905	Segment setting method parameter	SEG.T	
D0919, D0920	Alarm hysteresis parameters	HY1/2	
D0924 to D0932	Control action related parameters	PO to DIS	

5.8.2 Data Area for Common Function Parameters

Register No.	Category	Description	Remarks
D1013 to D1015	Retransmission output setting parameters	RET to RTL	For details on the parameters, see the User's Manual of UP350/UP351. Parameters PCMD and ERJC are used for UP351 only.
D1036	Menu-lock setting parameter	LOCK	
D1037	PV color mode	PCMD	
D1038	External RJC setpoint	ERJC	

5.8.3 Data Area for SELECT Display Registration Parameters

Register No.	Category	Description	Remarks
D1101 to D1104	SELECT display registration parameters	C.S1 to C.S4	For details on the parameters, see the User's Manual of UP350/UP351.

5.9 PV Input, Control Output, and Communication Parameters

Area for PV Input, Control Output, and Communication Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1201	41201	04B0	IN	*R/W	D1251	41251	04E2	DLN	*R/W
D1202	41202	04B1	UNI	*R/W	D1252	41252	04E3	ADR	*R/W
D1203					D1253	41253	04E4	RP.T	*R/W
D1204	41204	04B3	RH	*R/W	D1254				
D1205	41205	04B4	RL	*R/W	D1255				
D1206	41206	04B5	SDP	R	D1256				
D1207	41207	04B6	SH	*R/W	D1257				
D1208	41208	04B7	SL	*R/W	D1258				
D1209	41209	04B8	BSL	*R/W	D1259				
D1210	41210	04B9	RJC	*R/W	D1260				
D1211					D1261				
D1212					D1262				
D1213					D1263				
D1214					D1264				
D1215					D1265				
D1216					D1266				
D1217					D1267				
D1218					D1268				
D1219					D1269				
D1220					D1270				
D1221					D1271				
D1222					D1272				
D1223					D1273				
D1224					D1274				
D1225					D1275				
D1226					D1276				
D1227					D1277				
D1228					D1278				
D1229					D1279				
D1230					D1280				
D1231					D1281				
D1232					D1282				
D1233					D1283				
D1234					D1284				
D1235					D1285				
D1236					D1286				
D1237					D1287				
D1238	41238	04D5	OT	*R/W	D1288				
D1239					D1289				
D1240	41240	04D7	CT	*R/W	D1290				
D1241					D1291				
D1242					D1292				
D1243					D1293				
D1244					D1294				
D1245					D1295				
D1246					D1296				
D1247	41247	04DE	PSL	*R/W	D1297				
D1248	41248	04DF	BPS	*R/W	D1298				
D1249	41249	04E0	PRI	*R/W	D1299				
D1250	41250	04E1	STP	*R/W	D1300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

5.9.1 Data Area for PV Input, Control Output, and Communication Parameters

Register No.	Category	Description	Remarks
D1201 to D1210	PV input parameters	IN to RJC	SDP (D register number 1206) is not a parameter, and this register is read-only. For details on the parameters, see the User s Manual of UP350/UP351.
D1238 to D1240	Control output parameters	OT to CT	For details on the parameters, see the User s Manual of UP350/UP351.
D1247 to D1253	RS-485 communication parameters	PSL to RP.T	See the manual GREEN Series Communication Functions.

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6. Functions and Use of D Registers (UM350/UM330,UM351/UM331)

6.1 Overview

This section explains the functions and use of D registers.

D registers store parameter data, flag data and process data of the GREEN Series controller. You can readily use these internal data items by reading from or writing to the D registers.

You can use D registers to perform:

- **Centralized control using a higher-level device**
- **Data exchange by reading/writing data from/to a higher-level device**

6.2 Interpretation of D Register Tables

This section explains how to read the D Register Map tables in this chapter. The numbers listed in the leftmost column are D register numbers ((1) below). The five-digit numbers in the next column are reference numbers used for MODBUS communication ((2) below). The numbers in the column third from left are register numbers in hexadecimal notation used in MODBUS communication programs ((3) below). Each register code name in the D Register Map tables represents a specific process data item, operation parameter, setup parameter or other data items such as a flag. For details on the operation parameters and setup parameters, see the user's manual of UM350/UM330/UM351/UM331.

Name of D Register Map				
D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R

(1) D register number

(2) Reference number (for MODBUS communication)

(3) Hex number (for MODBUS communication program)

Permission of read/write by communication

An asterisk (*) in this column indicates that the number of writing actions is limited to 100,000.

6.3 Classification of D Registers

■ Classification of D Register Map Tables

The table below outlines how the D registers are classified by their numbers in the D Register Map tables.

Table 6.1 Classification of D Registers

Register No.	Area and data categories		Description	Reference
D0001 to D0049	Process data area (Note 1)	Data displayed for operation	PV, SP, OUT, and others	Section 6.4
D0050 to D0100	User area (Note 2), represented by shaded cells in the table		If a graphic panel is used, this area is used for communication with the graphic panel.	Section 6.4
D0101 to D0200	Cannot be used.			
D0201 to D0300	Operation parameters (Note 1)	Computation parameters	BS, FL, and others	Section 6.5
D0301 to D0900	Cannot be used			
D0901 to D1000	Setup parameters (Note 1)	Alarm-related parameters	AL, HY, DIS	Section 6.6
D1001 to D1100		Common function parameters	RET, LOCK	Section 6.6
D1101 to D1200		SELECT display registration parameters	CS	Section 6.6
D1201 to D1300		PV input and communication parameters	IN, PSL	Section 6.7

Note 1: Data for process values, operation parameters and setup parameters are stored in the types (PV input range, PV input range span, %, or ABS without the decimal point) indicated in the Operation Parameter Lists and Setup Parameter Lists of UM350/UM330/UM351/UM331 s user s manual. The OFF and ON states are represented by 0 and 1, respectively. D registers D0001 to D0049 are read-only.

Note 2: When communicating with a graphic panel, do not write to or read from this area (D0050 to D0100) because this area is reserved for 16-bit register data used by graphic panels.

[See Also] Section 6.4, Process Data and User Area.

NOTE

It is prohibited to read/write data by communication from/to the registers of blank cells in the register map tables. If you attempt to do so, the UM350/UM330/UM351/UM331 may not operate properly.

6.4 Process Data and User Area

Area for process data									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0001	40001	0000	ADERROR	R	D0051	40051	0032		R/W
D0002	40002	0001	ERROR	R	D0052	40052	0033		R/W
D0003	40003	0002	PV	R	D0053	40053	0034		R/W
D0004					D0054	40054	0035		R/W
D0005					D0055	40055	0036		R/W
D0006					D0056	40056	0037		R/W
D0007					D0057	40057	0038		R/W
D0008					D0058	40058	0039		R/W
D0009					D0059	40059	003A		R/W
D0010					D0060	40060	003B		R/W
D0011	40011	000A	ALM	R	D0061	40061	003C		R/W
D0012					D0062	40062	003D		R/W
D0013					D0063	40063	003E		R/W
D0014					D0064	40064	003F		R/W
D0015					D0065	40065	0040		R/W
D0016					D0066	40066	0041		R/W
D0017					D0067	40067	0042		R/W
D0018					D0068	40068	0043		R/W
D0019					D0069	40069	0044		R/W
D0020					D0070	40070	0045		R/W
D0021					D0071	40071	0046		R/W
D0022					D0072	40072	0047		R/W
D0023					D0073	40073	0048		R/W
D0024					D0074	40074	0049		R/W
D0025					D0075	40075	004A		R/W
D0026					D0076	40076	004B		R/W
D0027					D0077	40077	004C		R/W
D0028					D0078	40078	004D		R/W
D0029					D0079	40079	004E		R/W
D0030					D0080	40080	004F		R/W
D0031					D0081	40081	0050		R/W
D0032					D0082	40082	0051		R/W
D0033					D0083	40083	0052		R/W
D0034					D0084	40084	0053		R/W
D0035	40035	0022	PARAERR	R	D0085	40085	0054		R/W
D0036					D0086	40086	0055		R/W
D0037					D0087	40087	0056		R/W
D0038					D0088	40088	0057		R/W
D0039					D0089	40089	0058		R/W
D0040					D0090	40090	0059		R/W
D0041					D0091	40091	005A		R/W
D0042					D0092	40092	005B		R/W
D0043					D0093	40093	005C		R/W
D0044					D0094	40094	005D		R/W
D0045					D0095	40095	005E		R/W
D0046					D0096	40096	005F		R/W
D0047					D0097	40097	0060		R/W
D0048					D0098	40098	0061		R/W
D0049					D0099	40099	0062		R/W
D0050	40050	0031		R/W	D0100	40100	0063		R/W

Shaded area : User area (You cannot use these registers when a graphic panel is used.)

6.4.1 Process Data Area (Read-only)

Some of the registers in this area (D0001 to D0049, read-only) are designed to represent two or more events, such as errors and statuses, using combinations of bits within the register. If any of the events shown in the following tables occur, the corresponding bit is set to 1. The bit remains 0 if the event does not occur. Note that bits with blank fields in the tables are not in use.

● Bit Configuration of D0001: ADERROR (Input Error)

Bit	Code	Event
0	ADERR.st	Input A/D converter error
1 to 15		

● Bit Configuration of D0002: ERROR (PV Error)

Bit	Code	Event
0		
1	PVBO.st	PV burnout error
2	RJCERR.st	PV RJC error
3		
4	PV+over.st	PV over-scale
5	PV-over.st	PV under-scale
6 to 15		

● D0003: PV (Measured input value)

● Bit Configuration of D0011: ALM (Alarm Status)

Bit	Code	Event
0	ALM1.st	‘1’ when alarm 1 is ON; ‘0’ when OFF
1	ALM2.st	‘1’ when alarm 2 is ON; ‘0’ when OFF
2	ALM3.st	‘1’ when alarm 3 is ON; ‘0’ when OFF
3		
4	ALM4.st	‘1’ when alarm 4 is ON; ‘0’ when OFF
5 to 15		

[See Also] User’s Manual of UM350/UM330/UM351/UM331

● Bit Configuration of D0035: PARAERR (Error in calibration values and parameters)

Bit	Code	Event
0	CALB.E.st	Calibration value error
1 to 5		
6	SETUP.st	Setup parameter error
7		
8	PARA.E.st	Operation parameter error
9	MODE.E.st	Error in power-failure backup data
12	EEP.E.st	EEPROM error
10, 11, 13		
14	SYSTEM.E.st	System data error
15		

6.4.2 User Area

Register No.	Category	Description
D0050 to D0100	User area	Users can read/write data from/to the registers in this area. However, if a graphic panel is used in the system, users cannot use this area.

6.5 Computation Parameters

Area for Computation Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0201					D0251				
D0202					D0252				
D0203					D0253				
D0204					D0254				
D0205					D0255				
D0206					D0256				
D0207					D0257				
D0208					D0258				
D0209					D0259				
D0210					D0260				
D0211					D0261				
D0212					D0262				
D0213					D0263				
D0214					D0264				
D0215					D0265				
D0216					D0266				
D0217					D0267				
D0218					D0268				
D0219					D0269				
D0220					D0270				
D0221					D0271				
D0222					D0272				
D0223					D0273				
D0224					D0274				
D0225					D0275				
D0226					D0276				
D0227					D0277				
D0228					D0278				
D0229					D0279				
D0230					D0280				
D0231	40231	00E6	A1	R/W	D0281				
D0232	40232	00E7	A2	R/W	D0282				
D0233	40233	00E8	A3	R/W	D0283				
D0234	40234	00E9	A4	R/W	D0284				
D0235	40235	00EA	PEAK	R/W	D0285				
D0236	40236	00EB	BOTM	R/W	D0286				
D0237	40237	00EC	PCCH (NOTE)	*R/W	D0287				
D0238	40238	00ED	PCCL (NOTE)	*R/W	D0288				
D0239					D0289				
D0240					D0290				
D0241					D0291				
D0242					D0292				
D0243	40243	00F2	BS	*R/W	D0293				
D0244	40244	00F3	FL	*R/W	D0294				
D0245					D0295				
D0246					D0296				
D0247					D0297				
D0248					D0298				
D0249					D0299				
D0250					D0300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

NOTE : Parameters PCCH and PCCL are used for UM351/UM331 only.

6.5.1 Data Area for Alarm Setpoint, Computation, and PV-related Parameters

Register No.	Category	Description	Remarks
D0231 to D0234	Alarm setpoint parameters	A1 to A4: Alarm setpoints for alarm 1 to 4	For details on the parameters, see the User's Manual of UM350/UM330/UM351/UM331. Parameters PCCH and PCCL are used for UM351/UM331 only.
D0235	PV-related parameters	PEAK: Peak value of PV	
D0236		BOTM: Bottom value of PV	
D0237	PV color change parameters	PCCH: High limit for PV color change	
D0238		PCCL: Low limit for PV color change	
D0243	Computation parameters	BS: PV bias	
D0244		FL: PV filter	

6.6 Alarm, Common Function, and SELECT Display Registration Parameters

Area for Alarm-related Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D0901					D0951				
D0902					D0952				
D0903					D0953				
D0904					D0954				
D0905					D0955				
D0906					D0956				
D0907					D0957				
D0908					D0958				
D0909					D0959				
D0910					D0960				
D0911					D0961				
D0912					D0962				
D0913					D0963				
D0914					D0964				
D0915	40915	0392	AL1	*R/W	D0965				
D0916	40916	0393	AL2	*R/W	D0966				
D0917	40917	0394	AL3	*R/W	D0967				
D0918	40918	0395	AL4	*R/W	D0968				
D0919	40919	0396	HY1	*R/W	D0969				
D0920	40920	0397	HY2	*R/W	D0970				
D0921	40921	0398	HY3	*R/W	D0971				
D0922	40922	0399	HY4	*R/W	D0972				
D0923					D0973				
D0924					D0974				
D0925					D0975				
D0926					D0976				
D0927					D0977				
D0928					D0978				
D0929					D0979				
D0930					D0980				
D0931					D0981				
D0932	40932	03A3	DIS	*R/W	D0982				
D0933					D0983				
D0934					D0984				
D0935	40935	03A6	DY1	*R/W	D0985				
D0936	40936	03A7	DY2	*R/W	D0986				
D0937	40937	03A8	DY3	*R/W	D0987				
D0938	40938	03A9	DY4	*R/W	D0988				
D0939					D0989				
D0940					D0990				
D0941					D0991				
D0942					D0992				
D0943					D0993				
D0944					D0994				
D0945					D0995				
D0946					D0996				
D0947					D0997				
D0948					D0998				
D0949					D0999				
D0950					D1000				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

Area for Common Function Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1001					D1051				
D1002					D1052				
D1003					D1053				
D1004					D1054				
D1005					D1055				
D1006					D1056				
D1007					D1057				
D1008					D1058				
D1009					D1059				
D1010					D1060				
D1011					D1061				
D1012					D1062				
D1013	41013	03F4	RET	*R/W	D1063				
D1014	41014	03F5	RTH	*R/W	D1064				
D1015	41015	03F6	RTL	*R/W	D1065				
D1016					D1066				
D1017					D1067				
D1018					D1068				
D1019					D1069				
D1020					D1070				
D1021					D1071				
D1022					D1072				
D1023					D1073				
D1024					D1074				
D1025					D1075				
D1026					D1076				
D1027					D1077				
D1028					D1078				
D1029					D1079				
D1030					D1080				
D1031					D1081				
D1032					D1082				
D1033					D1083				
D1034					D1084				
D1035					D1085				
D1036	41036	040B	LOCK	R	D1086				
D1037	41037	040C	PCMD (NOTE)	*R/W	D1087				
D1038	41038	040D	ERJC (NOTE)	*R/W	D1088				
D1039					D1089				
D1040					D1090				
D1041					D1091				
D1042					D1092				
D1043					D1093				
D1044					D1094				
D1045					D1095				
D1046					D1096				
D1047					D1097				
D1048					D1098				
D1049					D1099				
D1050					D1100				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

NOTE : Parameters PCMD and ERJC are used for UM351/UM331 only.

Area for SELECT Display Registration Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1101	41101	044C	C.S1	*R/W	D1151				
D1102	41102	044D	C.S2	*R/W	D1152				
D1103	41103	044E	C.S3	*R/W	D1153				
D1104	41104	044F	C.S4	*R/W	D1154				
D1105					D1155				
D1106					D1156				
D1107					D1157				
D1108					D1158				
D1109					D1159				
D1110					D1160				
D1111					D1161				
D1112					D1162				
D1113					D1163				
D1114					D1164				
D1115					D1165				
D1116					D1166				
D1117					D1167				
D1118					D1168				
D1119					D1169				
D1120					D1170				
D1121					D1171				
D1122					D1172				
D1123					D1173				
D1124					D1174				
D1125					D1175				
D1126					D1176				
D1127					D1177				
D1128					D1178				
D1129					D1179				
D1130					D1180				
D1131					D1181				
D1132					D1182				
D1133					D1183				
D1134					D1184				
D1135					D1185				
D1136					D1186				
D1137					D1187				
D1138					D1188				
D1139					D1189				
D1140					D1190				
D1141					D1191				
D1142					D1192				
D1143					D1193				
D1144					D1194				
D1145					D1195				
D1146					D1196				
D1147					D1197				
D1148					D1198				
D1149					D1199				
D1150					D1200				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

6.6.1 Data Area for Alarm-related Parameters

Register No.	Category	Description	Remarks
D0915 to D0918	Alarm setting parameters	AL1 to AL3	For alarm types, see the User s Manual of UM350/UM330/UM351/UM331.
D0919 to D0922	Alarm hysteresis	HY1 to HY3	0.0 to 100.0% of PV input range span
D0932	DI selection	DIS	Setting: 0, 1, 2, 3, or 4
D0935 to D0938	Alarm-ON delay time	DY1 to DY4	0.00 to 99.59 (minute. second)

6.6.2 Data Area for Common Function Parameters

Register No.	Category	Description	Remarks
D1013 to D1015	Retransmission output setting parameters	RET to RTL	For details on the parameters, see the User's Manual of UM350/UM330/UM351/UM331. Parameters PCMD and ERJC are used for UM351/UM331 only.
D1036	Menu-lock setting parameters	LOCK	
D1037	PV color mode	PCMD	
D1038	External RJC setpoint	ERJC	

6.6.3 Data Area for SELECT Display Registration Parameters

Register No.	Category	Description	Remarks
D1101 to D1104	SELECT display registration parameters	C.S1 to C.S4	For details on the parameters, see the User's Manual of UM350/UM330/UM351/UM331.

6.7 PV Input and Communication Parameters

Area for PV Input and Communication Parameters									
D-Reg No.	Ref No.	H No.	Register name	R/W	D-Reg No.	Ref No.	H No.	Register name	R/W
D1201	41201	04B0	IN	*R/W	D1251	41251	04E2	DLN	*R/W
D1202	41202	04B1	UNI	*R/W	D1252	41252	04E3	ADR	*R/W
D1203					D1253	41253	04E4	RP.T	*R/W
D1204	41204	04B3	RH	*R/W	D1254				
D1205	41205	04B4	RL	*R/W	D1255				
D1206	41206	04B5	SDP	R	D1256				
D1207	41207	04B6	SH	*R/W	D1257				
D1208	41208	04B7	SL	*R/W	D1258				
D1209	41209	04B8	BSL	*R/W	D1259				
D1210	41210	04B9	RJC	*R/W	D1260				
D1211					D1261				
D1212					D1262				
D1213					D1263				
D1214					D1264				
D1215					D1265				
D1216					D1266				
D1217					D1267				
D1218					D1268				
D1219					D1269				
D1220					D1270				
D1221					D1271				
D1222					D1272				
D1223					D1273				
D1224					D1274				
D1225					D1275				
D1226					D1276				
D1227					D1277				
D1228					D1278				
D1229					D1279				
D1230					D1280				
D1231					D1281				
D1232					D1282				
D1233					D1283				
D1234					D1284				
D1235					D1285				
D1236					D1286				
D1237					D1287				
D1238					D1288				
D1239					D1289				
D1240					D1290				
D1241					D1291				
D1242					D1292				
D1243					D1293				
D1244					D1294				
D1245					D1295				
D1246					D1296				
D1247	41247	04DE	PSL	*R/W	D1297				
D1248	41248	04DF	BPS	*R/W	D1298				
D1249	41249	04E0	PRI	*R/W	D1299				
D1250	41250	04E1	STP	*R/W	D1300				

An asterisk (*) indicates that the number of writing actions is limited to 100,000.

6.7.1 Data Area for PV Input and Communication Parameters

Register No.	Category	Description	Remarks
D1201 to D1210	PV input parameters	IN to RJC	SDP (D register number 1206) is not a parameter, and this register is read-only. For details on the parameters, see the User's Manual of UM350/UM330/UM351/UM331.
D1247 to D1253	RS-485 communication parameters	PSL to RP.T	See the manual GREEN Series Communication Functions.

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7. Functions and Use of B Registers (UP750/UP550)

7.1 Overview

This section explains the functions and use of B registers.

B registers store program pattern data of UP750/UP550. You can readily use this internal data by reading from or writing to the B registers.

You can use B registers to perform:

- **Program pattern management using a higher-level device**
- **Reading/writing of segment information from a higher-level device**

7.2 Interpretation of B Register Tables

This section explains how to read the B Register Map tables in this chapter. The numbers listed in the leftmost column are B register numbers ((1) below). The five-digit numbers in the next column are reference numbers used for MODBUS communication ((2) below). The numbers in the column third from left are register numbers in hexadecimal notation used in MODBUS communication programs ((3) below). Each register code name in the B Register Map tables represents a specific program related parameter or other data items such as a flag. For details on the parameters, see the user's manual of UP750/UP550.

Name of B Register Map				
B-Reg No.	Ref No.	H No.	Register name	R/W
B0001	41701	06A4	PTNO	*R/W

(1) B register number

(2) Reference number (for MODBUS communication)

(3) Hex number (for MODBUS communication program)

Permission of read/write by communication

An asterisk (*) in this column indicates that the number of writing actions is limited to 100,000 times.

■ Names of B Registers

The base names of some B registers are preceded by a combination of a number and then a period, and/or followed by a combination of a period and then a number, as shown in the format Y.□□□.X. (Y: group number; X: loop number)

Examples:

- The name 2.WZ.1 means the WZ of group 2 for Loop-1.
- The name SSP.2 means the SSP for Loop-2.

7.3 Classification of B Registers

■ Classification of B Register Map Tables

The B registers in the B Register Map tables are classified as shown below.

Table 7.1 Classification of B Registers

Register No.	Data categories	Description	Reference
B0001 to B0100	Program pattern information	Start target setpoint, wait function, repeat function, and others.	Section 7.4
B0101 to B0140	Segment information	Event function and others.	Section 7.4
B1301 to B1600	TSP values for 99 segments	Final target setpoint (TSP) values and others	Section 7.5

NOTE

It is prohibited to read/write data by communication from/to the registers of blank cells in the register map tables. If you attempt to do so, the UP750/UP550 may not operate properly.

7.4 Program Pattern and Segment Data

Area for Program Pattern Data									
B-Reg No.	Ref No.	H No.	Register name	R/W	B-Reg No.	Ref No.	H No.	Register name	R/W
B0001	41701	06A4	PTNO	R/W	B0051				
B0002	41702	06A5	SEGNO	R/W	B0052				
B0003	41703	06A6	RDTRG	R/W	B0053				
B0004	41704	06A7	WRTRG	R/W	B0054				
B0005	41705	06A8	PTN.ERR	R	B0055				
B0006					B0056				
B0007					B0057				
B0008	41708	06AB	Number of remaining SEGs	R	B0058				
B0009	41709	06AC	Number of remaining EVs	R	B0059				
B0010	41710	06AD	PTN.SEG	R	B0060				
B0011	41711	06AE	SSP1	R/W	B0061	41761	06E0	PTNO.A	R/W
B0012	41712	06AF	SSP2	R/W	B0062	41762	06E1	PTNO.B	R/W
B0013	41713	06B0	STC	R/W	B0063	41763	06E2	PTE.TRG	R/W
B0014	41714	06B1	1.WZ1	R/W	B0064	41764	06E3	PTC.TRG	R/W
B0015	41715	06B2	1.WZ2	R/W	B0065	41765	06E4	PTN.EER	R
B0016	41716	06B3	1.WTM	R/W	B0066				
B0017	41717	06B4	2.WZ1	R/W	B0067				
B0018	41718	06B5	2.WZ2	R/W	B0068				
B0019	41719	06B6	2.WTM	R/W	B0069				
B0020	41720	06B7	3.WZ1	R/W	B0070				
B0021	41721	06B8	3.WZ2	R/W	B0071				
B0022	41722	06B9	3.WTM	R/W	B0072				
B0023	41723	06BA	4.WZ1	R/W	B0073				
B0024	41724	06BB	4.WZ2	R/W	B0074				
B0025	41725	06BC	4.WTM	R/W	B0075				
B0026	41726	06BD	5.WZ1	R/W	B0076				
B0027	41727	06BE	5.WZ2	R/W	B0077				
B0028	41728	06BF	5.WTM	R/W	B0078				
B0029	41729	06C0	RCY	R/W	B0079				
B0030	41730	06C1	RST	R/W	B0080				
B0031	41731	06C2	REN	R/W	B0081	41781	06F4	PTN.USE1	R/W
B0032					B0082	41782	06F5	PTN.USE2	R/W
B0033					B0083	41783	06F6	PTN.USE3	R/W
B0034					B0084	41784	06F7	PTN.USE4	R/W
B0035					B0085	41785	06F8	PTN.USE5	R/W
B0036					B0086	41786	06F9	PTN.USE6	R/W
B0037					B0087	41787	06FA	PTN.USE7	R/W
B0038					B0088	41788	06FB	PTN.USE8	R/W
B0039					B0089	41789	06FC	PTN.USE9	R/W
B0040	41740	06CB	P.NAME1	R/W	B0090	41790	06FD	PTN.USE10	R/W
B0041	41741	06CC	P.NAME2	R/W	B0091	41791	06FE	PTN.USE11	R/W
B0042	41742	06CD	P.NAME3	R/W	B0092	41792	06FF	PTN.USE12	R/W
B0043	41743	06CE	P.NAME4	R/W	B0093	41793	0700	PTN.USE13	R/W
B0044	41744	06CF	P.NAME5	R/W	B0094	41794	0701	PTN.USE14	R/W
B0045	41745	06D0	P.NAME6	R/W	B0095	41795	0702	PTN.USE15	R/W
B0046	41746	06D1	P.NAME7	R/W	B0096	41796	0703	PTN.USE16	R/W
B0047	41747	06D2	P.NAME8	R/W	B0097	41797	0704	PTN.USE17	R/W
B0048	41748	06D3	P.NAME9	R/W	B0098	41798	0705	PTN.USE18	R/W
B0049	41749	06D4	P.NAME10	R/W	B0099	41799	0706	PTN.USE19	R/W
B0050					B0100				

Area for Segment Data									
B-Reg No.	Ref No.	H No.	Register name	R/W	B-Reg No.	Ref No.	H No.	Register name	R/W
B0101					B0151				
B0102					B0152				
B0103	41803	070A	RDTRG	R/W	B0153				
B0104	41804	070B	WRTRG	R/W	B0154				
B0105	41805	070C	PTN.ERR	R	B0155				
B0106					B0156				
B0107					B0157				
B0108	41808	070F	Number of remaining SEGs	R	B0158				
B0109	41809	0710	Number of remaining EVs	R	B0159				
B0110	41810	0711	PTN.SEG	R	B0160				
B0111	41811	0712	TSP1	R/W	B0161				
B0112	41812	0713	TSP2	R/W	B0162				
B0113	41813	0714	TIME	R/W	B0163				
B0114	41814	0715	TM.RT	R/W	B0164				
B0115	41815	0716	PIDNO	R/W	B0165				
B0116	41816	0717	EV1	R/W	B0166				
B0117	41817	0718	ON1/TY1	R/W	B0167				
B0118	41818	0719	OFF1/PE1	R/W	B0168				
B0119	41819	071A	EV2	R/W	B0169				
B0120	41820	071B	ON2/TY2	R/W	B0170				
B0121	41821	071C	OFF2/PE2	R/W	B0171				
B0122	41822	071D	EV3	R/W	B0172				
B0123	41823	071E	ON3/TY3	R/W	B0173				
B0124	41824	071F	OFF3/PE3	R/W	B0174				
B0125	41825	0720	EV4	R/W	B0175				
B0126	41826	0721	ON4/TY4	R/W	B0176				
B0127	41827	0722	OFF4/PE4	R/W	B0177				
B0128	41828	0723	EV5	R/W	B0178				
B0129	41829	0724	ON5/TY5	R/W	B0179				
B0130	41830	0725	OFF5/PE5	R/W	B0180				
B0131	41831	0726	EV6	R/W	B0181				
B0132	41832	0727	ON6/TY6	R/W	B0182				
B0133	41833	0728	OFF6/PE6	R/W	B0183				
B0134	41834	0729	EV7	R/W	B0184				
B0135	41835	072A	ON7/TY7	R/W	B0185				
B0136	41836	072B	OFF7/PE7	R/W	B0186				
B0137	41837	072C	EV8	R/W	B0187				
B0138	41838	072D	ON8/TY8	R/W	B0188				
B0139	41839	072E	OFF8/PE8	R/W	B0189				
B0140	41840	072F	JC	R/W	B0190				
B0141					B0191				
B0142					B0192				
B0143					B0193				
B0144					B0194				
B0145					B0195				
B0146					B0196				
B0147					B0197				
B0148					B0198				
B0149					B0199				
B0150					B0200				

7.4.1 Program Pattern Information

Refer to ”7.6 Using B Registers” to use the following B registers.

● B0001: PTNO (Pattern number setting)

Setting range for UP750: 1 to 300

Setting range for UP550: 1 to 30

● B0002: SEGNO (Segment number setting)

Setting range: 0 to 99.

● B0003: RDTRG (Reading trigger)

Set “1” when reading data.

● B0004: WRTRG (Writing trigger)

Set “1” when writing data.

● B0005: PTN.ERR (Reading/writing error information)

Error if other than “0” is stored when reading/writing data.

Normal if “0” is stored when reading/writing data.

● B0008: Number of Remaining SEGs (Number of remaining segments)

● B0009: Number of Remaining EVs (Number of remaining events)

● B0010: PTN.SEG (Number of segments within a pattern)

● B0011/12: SSP1/2 (Start target setpoint 1/2)

Setting range: 0 to 100% of PV input range.

SSP2 is available when dual-loop control or temperature and humidity control is selected and the program pattern-2 retransmission (PT2.G) is ON.

● B0013: STC (Start code)

-1: Transfers to the wait/repeat action parameters.
Not changes the contens.

Other than “-1”: Transfers to the segment parameters.

● B0014/15, B0017/18, B0020/21, B0023/24, B0026/27: n.WZ1/2 (Wait zone of program pattern for Loop-1/2) (n=1 to 5)

Setting range: 0 to 10% of PV input range span

● B0016, B0019, B0022, B0025, B0028: n.WTM1/2 (Wait time for Loop-1/2) (n=1 to 5)

Setting range: 00.01 to 99.59 (hh.mm or mm.ss).

● B0029: RCY (Number of repetitions)

Setting range: 0 to 999.

● B0030: RST (Start-of-repetition segment number)

● B0031: REN (End-of-repetition segment number)

Setting range for B0030 and B0031: $1 \leq RST \leq REN \leq 99$

● B0040 to B0049: P.NAME1 to P.NAME10 (Program pattern name)

● B0061: PTN.A (Source pattern number)

● B0062: PTN.B (Destination pattern number)

● B0063: PTE.TRG (Program pattern deleting trigger)

● B0064: PTC.TRG (Program pattern copying trigger)

● B0065: PTN.EER (Error information when copying program pattern)

Error if other than “0” is stored when reading/writing data.

Normal if “0” is stored when reading/writing data.

● Bit Configuration of B0081 to B0099: PTN.USE1 to PTN.USE19 (Program patterns)

Bit	Code	Contents
0	PTNO.b0.st	Program Pattern 1
1	PTNO.b1.st	Program Pattern 2
2	PTNO.b2.st	Program Pattern 3
3	PTNO.b3.st	Program Pattern 4
4	PTNO.b4.st	Program Pattern 5
5	PTNO.b5.st	Program Pattern 6
6	PTNO.b6.st	Program Pattern 7
7	PTNO.b7.st	Program Pattern 8
8	PTNO.b8.st	Program Pattern 9
9	PTNO.b9.st	Program Pattern 10
10	PTNO.b0.st	Program Pattern 11
11	PTNO.b1.st	Program Pattern 12
12	PTNO.b0.st	Program Pattern 13
13	PTNO.b1.st	Program Pattern 14
14	PTNO.b0.st	Program Pattern 15
15	PTNO.b1.st	Program Pattern 16

Registers B0081 to B0099 represent the seleced program pattern numbers.

Bit is “0”: When the bit status changes from OFF to ON.

Bit is “1”: When the bit status changes from ON to OFF.

Pattern 17 and subsequent patterns are assigned to the bit train of B0082: PTNUSE2 to B0099: PTNUSE19 in the same manner as PTNUSE1. (With UP550, up to bit 13 of PTNUSE2 are significant.)

● B0103: RDTRG (Reading trigger)

Set “1”when reading data.

● B0104: WRTRG (Writing trigger)

Set “1”when writing data.

● B0105: PTN.ERR (Reading/writing error information)

Error if other than “0” is stored when reading/writing data.

Normal if “0” is stored when reading/writing data.

● B0108: Number of Remaining SEGs (Number of remaining segments)

● B0109: Number of Remaining EVs (Number of remaining events)

● B0110: PTN.SEG (Number of segments in a pattern)

● B0111/112: TSP1/2 (Final target setpoint for Loop-1/2)

Setting range: 0 to 100% of PV input range

TSP2 is available when dual-loop control or temperature and humidity control is selected and the program pattern-2 retransmission (PT2.G) is ON.

● B0113: TIME (Time-set segment time)

Setting range: 00.01 to 99.59 (hh.mm or mm.ss)

● B0114: TM.RT (Ramp-set segment time)

For ramp segments: Set the amount of change per minute or hour (0 to 100% of PV input range span)

For soak segments: Set within the range of 00.01 to 99.59 (hh.mm or mm.ss)

● B0115: PIDNO (Group number for segment PID)

● B0116, B0119, B0122, B0125, B0128, B0131, B0134, B0137: EVn (Event number) (n = 1 to 8)

● B0117, B0120, B0123, B0126, B0129, B0132, B0135, B0138: ONn/TYn (ON time or PV event type) (n = 1 to 8)

● B0118, B0121, B0124, B0127, B0130, B0133, B0136, B0139: OFFn/PEn (OFF time or PV event setpoint) (n = 1 to 8)

● B0140: JC (Junction code)

7.5 Final Target Setpoint (TSP) Data

Area for Final Target Setpoint (TSP) Data									
B-Reg No.	Ref No.	H No.	Register name	R/W	B-Reg No.	Ref No.	H No.	Register name	R/W
B1301	43001	0BB8	PTNO	R/W	B1351				
B1302					B1352				
B1303	43003	0BBA	RDTRG	R/W	B1353				
B1304	43004	0BBB	WR.TRG	R/W	B1354				
B1305	43005	0BBC	PTN.ERR	R/W	B1355				
B1306					B1356				
B1307					B1357				
B1308					B1358				
B1309					B1359				
B1310	43010	0BC1	PTN.SEG	R	B1360				
B1311					B1361				
B1312					B1362				
B1313					B1363				
B1314					B1364				
B1315					B1365				
B1316					B1366				
B1317					B1367				
B1318					B1368				
B1319					B1369				
B1320					B1370				
B1321					B1371				
B1322					B1372				
B1323					B1373				
B1324					B1374				
B1325					B1375				
B1326					B1376				
B1327					B1377				
B1328					B1378				
B1329					B1379				
B1330					B1380				
B1331					B1381				
B1332					B1382				
B1333					B1383				
B1334					B1384				
B1335					B1385				
B1336					B1386				
B1337					B1387				
B1338					B1388				
B1339					B1389				
B1340					B1390				
B1341					B1391				
B1342					B1392				
B1343					B1393				
B1344					B1394				
B1345					B1395				
B1346					B1396				
B1347					B1397				
B1348					B1398				
B1349					B1399				
B1350					B1400				

Area for Final Target Setpoint 1 (TSP1) Data									
B-Reg No.	Ref No.	H No.	Register name	R/W	B-Reg No.	Ref No.	H No.	Register name	R/W
B1401	43101	0C1C	SSP1	R	B1451	43151	0C4E	TSP1.50	R
B1402	43102	0C1D	TSP1.1	R	B1452	43152	0C4F	TSP1.51	R
B1403	43103	0C1E	TSP1.2	R	B1453	43153	0C50	TSP1.52	R
B1404	43104	0C1F	TSP1.3	R	B1454	43154	0C51	TSP1.53	R
B1405	43105	0C20	TSP1.4	R	B1455	43155	0C52	TSP1.54	R
B1406	43106	0C21	TSP1.5	R	B1456	43156	0C53	TSP1.55	R
B1407	43107	0C22	TSP1.6	R	B1457	43157	0C54	TSP1.56	R
B1408	43108	0C23	TSP1.7	R	B1458	43158	0C55	TSP1.57	R
B1409	43109	0C24	TSP1.8	R	B1459	43159	0C56	TSP1.58	R
B1410	43110	0C25	TSP1.9	R	B1460	43160	0C57	TSP1.59	R
B1411	43111	0C26	TSP1.10	R	B1461	43161	0C58	TSP1.60	R
B1412	43112	0C27	TSP1.11	R	B1462	43162	0C59	TSP1.61	R
B1413	43113	0C28	TSP1.12	R	B1463	43163	0C5A	TSP1.62	R
B1414	43114	0C29	TSP1.13	R	B1464	43164	0C5B	TSP1.63	R
B1415	43115	0C2A	TSP1.14	R	B1465	43165	0C5C	TSP1.64	R
B1416	43116	0C2B	TSP1.15	R	B1466	43166	0C5D	TSP1.65	R
B1417	43117	0C2C	TSP1.16	R	B1467	43167	0C5E	TSP1.66	R
B1418	43118	0C2D	TSP1.17	R	B1468	43168	0C5F	TSP1.67	R
B1419	43119	0C2E	TSP1.18	R	B1469	43169	0C60	TSP1.68	R
B1420	43120	0C2F	TSP1.19	R	B1470	43170	0C61	TSP1.69	R
B1421	43121	0C30	TSP1.20	R	B1471	43171	0C62	TSP1.70	R
B1422	43122	0C31	TSP1.21	R	B1472	43172	0C63	TSP1.71	R
B1423	43123	0C32	TSP1.22	R	B1473	43173	0C64	TSP1.72	R
B1424	43124	0C33	TSP1.23	R	B1474	43174	0C65	TSP1.73	R
B1425	43125	0C34	TSP1.24	R	B1475	43175	0C66	TSP1.74	R
B1426	43126	0C35	TSP1.25	R	B1476	43176	0C67	TSP1.75	R
B1427	43127	0C36	TSP1.26	R	B1477	43177	0C68	TSP1.76	R
B1428	43128	0C37	TSP1.27	R	B1478	43178	0C69	TSP1.77	R
B1429	43129	0C38	TSP1.28	R	B1479	43179	0C6A	TSP1.78	R
B1430	43130	0C39	TSP1.29	R	B1480	43180	0C6B	TSP1.79	R
B1431	43131	0C3A	TSP1.30	R	B1481	43181	0C6C	TSP1.80	R
B1432	43132	0C3B	TSP1.31	R	B1482	43182	0C6D	TSP1.81	R
B1433	43133	0C3C	TSP1.32	R	B1483	43183	0C6E	TSP1.82	R
B1434	43134	0C3D	TSP1.33	R	B1484	43184	0C6F	TSP1.83	R
B1435	43135	0C3E	TSP1.34	R	B1485	43185	0C70	TSP1.84	R
B1436	43136	0C3F	TSP1.35	R	B1486	43186	0C71	TSP1.85	R
B1437	43137	0C40	TSP1.36	R	B1487	43187	0C72	TSP1.86	R
B1438	43138	0C41	TSP1.37	R	B1488	43188	0C73	TSP1.87	R
B1439	43139	0C42	TSP1.38	R	B1489	43189	0C74	TSP1.88	R
B1440	43140	0C43	TSP1.39	R	B1490	43190	0C75	TSP1.89	R
B1441	43141	0C44	TSP1.40	R	B1491	43191	0C76	TSP1.90	R
B1442	43142	0C45	TSP1.41	R	B1492	43192	0C77	TSP1.91	R
B1443	43143	0C46	TSP1.42	R	B1493	43193	0C78	TSP1.92	R
B1444	43144	0C47	TSP1.43	R	B1494	43194	0C79	TSP1.93	R
B1445	43145	0C48	TSP1.44	R	B1495	43195	0C7A	TSP1.94	R
B1446	43146	0C49	TSP1.45	R	B1496	43196	0C7B	TSP1.95	R
B1447	43147	0C4A	TSP1.46	R	B1497	43197	0C7C	TSP1.96	R
B1448	43148	0C4B	TSP1.47	R	B1498	43198	0C7D	TSP1.97	R
B1449	43149	0C4C	TSP1.48	R	B1499	43199	0C7E	TSP1.98	R
B1450	43150	0C4D	TSP1.49	R	B1500	43200	0C7F	TSP1.99	R

Area for Final Target Setpoint 2 (TSP2) Data									
B-Reg No.	Ref No.	H No.	Register name	R/W	B-Reg No.	Ref No.	H No.	Register name	R/W
B1501	43201	0C80	SSP2	R	B1551	43251	0CB2	TSP2.50	R
B1502	43202	0C81	TSP2.1	R	B1552	43252	0CB3	TSP2.51	R
B1503	43203	0C82	TSP2.2	R	B1553	43253	0CB4	TSP2.52	R
B1504	43204	0C83	TSP2.3	R	B1554	43254	0CB5	TSP2.53	R
B1505	43205	0C84	TSP2.4	R	B1555	43255	0CB6	TSP2.54	R
B1506	43206	0C85	TSP2.5	R	B1556	43256	0CB7	TSP2.55	R
B1507	43207	0C86	TSP2.6	R	B1557	43257	0CB8	TSP2.56	R
B1508	43208	0C87	TSP2.7	R	B1558	43258	0CB9	TSP2.57	R
B1509	43209	0C88	TSP2.8	R	B1559	43259	0CBA	TSP2.58	R
B1510	43210	0C89	TSP2.9	R	B1560	43260	0CBB	TSP2.59	R
B1511	43211	0C8A	TSP2.10	R	B1561	43261	0CBC	TSP2.60	R
B1512	43212	0C8B	TSP2.11	R	B1562	43262	0CBD	TSP2.61	R
B1513	43213	0C8C	TSP2.12	R	B1563	43263	0CBE	TSP2.62	R
B1514	43214	0C8D	TSP2.13	R	B1564	43264	0CBF	TSP2.63	R
B1515	43215	0C8E	TSP2.14	R	B1565	43265	0CC0	TSP2.64	R
B1516	43216	0C8F	TSP2.15	R	B1566	43266	0CC1	TSP2.65	R
B1517	43217	0C90	TSP2.16	R	B1567	43267	0CC2	TSP2.66	R
B1518	43218	0C91	TSP2.17	R	B1568	43268	0CC3	TSP2.67	R
B1519	43219	0C92	TSP2.18	R	B1569	43269	0CC4	TSP2.68	R
B1520	43220	0C93	TSP2.19	R	B1570	43270	0CC5	TSP2.69	R
B1521	43221	0C94	TSP2.20	R	B1571	43271	0CC6	TSP2.70	R
B1522	43222	0C95	TSP2.21	R	B1572	43272	0CC7	TSP2.71	R
B1523	43223	0C96	TSP2.22	R	B1573	43273	0CC8	TSP2.72	R
B1524	43224	0C97	TSP2.23	R	B1574	43274	0CC9	TSP2.73	R
B1525	43225	0C98	TSP2.24	R	B1575	43275	0CCA	TSP2.74	R
B1526	43226	0C99	TSP2.25	R	B1576	43276	0CCB	TSP2.75	R
B1527	43227	0C9A	TSP2.26	R	B1577	43277	0CCC	TSP2.76	R
B1528	43228	0C9B	TSP2.27	R	B1578	43278	0CCD	TSP2.77	R
B1529	43229	0C9C	TSP2.28	R	B1579	43279	0CCE	TSP2.78	R
B1530	43230	0C9D	TSP2.29	R	B1580	43280	0CCF	TSP2.79	R
B1531	43231	0C9E	TSP2.30	R	B1581	43281	0CD0	TSP2.80	R
B1532	43232	0C9F	TSP2.31	R	B1582	43282	0CD1	TSP2.81	R
B1533	43233	0CA0	TSP2.32	R	B1583	43283	0CD2	TSP2.82	R
B1534	43234	0CA1	TSP2.33	R	B1584	43284	0CD3	TSP2.83	R
B1535	43235	0CA2	TSP2.34	R	B1585	43285	0CD4	TSP2.84	R
B1536	43236	0CA3	TSP2.35	R	B1586	43286	0CD5	TSP2.85	R
B1537	43237	0CA4	TSP2.36	R	B1587	43287	0CD6	TSP2.86	R
B1538	43238	0CA5	TSP2.37	R	B1588	43288	0CD7	TSP2.87	R
B1539	43239	0CA6	TSP2.38	R	B1589	43289	0CD8	TSP2.88	R
B1540	43240	0CA7	TSP2.39	R	B1590	43290	0CD9	TSP2.89	R
B1541	43241	0CA8	TSP2.40	R	B1591	43291	0CDA	TSP2.90	R
B1542	43242	0CA9	TSP2.41	R	B1592	43292	0CDB	TSP2.91	R
B1543	43243	0CAA	TSP2.42	R	B1593	43293	0CDC	TSP2.92	R
B1544	43244	0CAB	TSP2.43	R	B1594	43294	0CDD	TSP2.93	R
B1545	43245	0CAC	TSP2.44	R	B1595	43295	0CDE	TSP2.94	R
B1546	43246	0CAD	TSP2.45	R	B1596	43296	0CDF	TSP2.95	R
B1547	43247	0CAE	TSP2.46	R	B1597	43297	0CE0	TSP2.96	R
B1548	43248	0CAF	TSP2.47	R	B1598	43298	0CE1	TSP2.97	R
B1549	43249	0CB0	TSP2.48	R	B1599	43299	0CE2	TSP2.98	R
B1550	43250	0CB1	TSP2.49	R	B1600	43300	0CE3	TSP2.99	R

7.6 Using B Registers

By reading from/writing to B registers, you can obtain information such as the number of remaining unused segments and the number of remaining events that can be set.

7.6.1 Reading/Writing the Start Condition Data

You can read/write the following start condition parameters.

- SSP1/2: Start target setpoint
- STC: Start code
- n.WZ1/2: Wait zone
- n.WTM: Wait time
- RCY: Number of repetitions
- RST: Start-of-repetition segment number
- REN: End-of-repetition segment number

(1) How to Read

a. Write the pattern number to B0001 (= D1701). Make sure that the response is “OK.”

b. Write the segment number to B0002 (= D1702). Make sure that the response is “OK.”

c. Write “1” to B0003 (= D1703). Make sure that the response is “OK.”

d. Read B0003 (= D1703) and wait until “0” is returned.

e. Read B0005 (= D1705). If it is not “0,” a read error has occurred. When it is “0,” the data is stored into B0009 to B0031 and B0040 to B0049.

f. This completes the setup for read operation. Read the start target setpoint (SSP1/2).

g. You can also read out other start condition data at the same time: STC, n.WZ1/2, n.WTM, RCY, RST, and REN.

(2) How to Write

a. Write the pattern number to B0001 (= D1701). Make sure that the response is “OK.”

b. Write the segment number to B0002 (= D1702). Make sure that the response is “OK.”

c. Write data to B0011 to B0031 and B0040 to B0049. Make sure that the response is “OK.”

d. Write “1” to B0004 (= D1704). Make sure that the response is “OK.”

e. Read B0004 (= D1704) and wait until “0” is returned.

f. Read B0005 (= D1705). If it is not “0,” a write error has occurred. When it is “0,” the data is written into B0011 to B0031 and B0040 to B0049.

7.6.2 Reading/Writing the Segment Data and Event Data

You can read/write the following segment data and event data.

- TSP1/2: Final target setpoint for loop-1 and loop-2
- TIME: Time-set segment time (common to loop-1 and loop-2)
- TM.RT: Ramp-set segment time (common to loop-1 and loop-2)
- PID: Group number for segment PID (common to loop-1 and loop-2)
- EVn: Event number
- ONn/OFFn: ON time/OFF time of time event
- TYn/PEn: PV event type and setpoint

(1) How to Read

a. Write the pattern number to B0001 (= D1701). Make sure that the response is “OK.”
b. Write the segment number to B0002 (= D1702). Make sure that the response is “OK.”
c. Write “1” to B0103 (= D1803). Make sure that the response is “OK.”
d. Read B0103 (= D1803) and wait until “0” is returned.
e. Read B0105 (= D1805). If it is not “0,” a read error has occurred. When it is “0,” the data is stored into B0111 to B0140.
f. This completes the setup for read operation. Read out data from B0111 to B0140.

(2) How to Write

a. Write the pattern number to B0001 (= D1701). Make sure that the response is “OK.”
b. Write the segment number to B0002 (= D1702). Make sure that the response is “OK.”
c. Write data to B0111 to B0140. Make sure that the response is “OK.”
d. Write “1” to B0104 (= D1804). Make sure that the response is “OK.”
e. Read B0104 (= D1804) and wait until “0” is returned.
f. Read B0105 (= D1805). If it is not “0,” a write error has occurred. When it is “0,” the data is written into B0111 to B0140.

(3) Writing Segment Data of a Whole Pattern at the Same Time

a. Write the pattern number to B1301 (= D2001). Make sure that the response is “OK.”
(The existing program pattern cannot be overwritten.)
b. Write the segment number to B1302 (D302). Make sure that the response is “OK.”
c. Write the start target setpoint and final target setpoint
Write the final target setpoints for the segments specified in procedure (b).
Make sure that the response to the written command is “OK.”
Write the start target setpoint and final target setpoint of loop-1 of UP550 or UP750.
Start target setpoint SSP1 = B1401 (D3101)
Final target setpoint for segment 1 (TSP1.1) = B1402 (D3102)
Final target setpoint for segment 2 (TSP1.2) = B1403 (D3103)
Final target setpoint for segment 3 (TSP1.3) = B1404 (D3104)
: :
Final target setpoint for segment 99 (TSP1.99) = B1500 (D3200)

When using the loop-2 of UP750:

Start target setpoint SSP2=B1501 (D3201)

Final target setpoint for segment 1 (TSP2.1) = B1502 (D3202)

Final target setpoint for segment 2 (TSP2.2) = B1503 (D3203)

Final target setpoint for segment 3 (TSP2.3) = B1504 (D3204)

: :

Final target setpoint for segment 99 (TSP2.99) = B1600 (D3300)

d. Write the time (or ramp rate) for the segments specified in procedure (b).

Make sure that the response to the written command is “OK.”

Time for segment 1 (TIME.1) or ramp rate 1 (TM.RT.1) = B1602 (D3302)

Time for segment 2 (TIME.2) or ramp rate 2 (TM.RT.2) = B1603 (D3303)

Time for segment 3 (TIME.3) or ramp rate 3 (TM.RT.3) = B1604 (D3304)

: :

Time for segment 99 (TIME.99) or ramp rate 1 (TM.RT.99) = B1700 (D3400)

e. After completing the procedures (a) through (d), write “1” to B1304 (D3004).

f. Read B1304 (= D3004) and make sure that “0” is returned.

If it is not “0,” a write error has occurred.

[TIP] The number of remaining segments read B1308 (D3008).
Note: Write the event (PV event or Time event) and the junction code (JC) for each segment one by one.

7.6.3 Reading the Numbers of Remaining Segments and Remaining Events

Read out information from the read-only B registers.

(1) Reading the number of remaining unused segments

a. Write a pattern number and a segment number of any using program pattern in B0001 (PTNO) and B0002 (SEGNO), respectively.

b. Write “1” in B0003 (RDTRG).

c. Read B0008 or B0108 (number of remaining SEGs).

(2) Reading the number of segments within a pattern

a. Write the pattern number in B0001 (PTNO).

b. Write “1” in B0003 (RDTRG).

c. Read B0010 (PTN.SEG).

(3) Reading the number of remaining settable events

a. Write any pattern number and segment number in B0001 (PTNO) and B0002 (SEGNO), respectively.

b. Write “1” in B0003 (RDTRG).

c. Read B0009 or B0109 (number of remaining EVs).

7.6.4 Copying, Deleting, and Reading a Program Pattern

(1) Copying a program pattern

a. Write the source pattern number in B0061 (D1761). Make sure that the response is “OK.”

b. Write the destination pattern number in B0062 (D1762). Make sure that the response is “OK.”

c. Write “1” to B0064 (= D1764). Make sure that the response is “OK.”

d. Read B0064 (= D1764) and wait until “0” is returned.

e. Read B0065 (= D1765). If it is not “0,” the copy operation ended in failure. When it is “0,” the copy operation was successful.

(2) Deleting a program pattern

a. Write the pattern number you wish to delete in B0061 (D1761). Make sure that the response is “OK.”

b. Write “1” to B0063 (= D1763). Make sure that the response is “OK.”

c. Read B0063 (= D1763) and wait until “0” is returned.

d. Read B0065 (= D1765). If it is not “0,” the delete operation ended in failure. When it is “0,” the delete operation was successful.

(3) Reading out a program pattern

a. Write the pattern number you wish to read out in B01301 (D3001). Make sure that the response is “OK.”

b. Write “1” to B1303 (= D3003). Make sure that the response is “OK.”

c. Read B1303 (= D3003) and wait until “0” is returned.

d. Read B1305 (= D3005). If it is not “0,” a read error has occurred. When it is “0,” TSP data of the specified pattern number is stored into B1310 and B1401 to B1600.

7.7 Error Indication at Program Pattern Creation and Editing

Error code	Error information	Cause of error
0	No error	Normal end
01	Pattern creadtion or editing is disable during program operation.	Adding, deleting, or copying of the program pattern, segment, or event was excuted during program or local operation.
02	Pattern number error Only when using communication (The error code is stored in register B0005.)	The specified pattern number does not exist. Pattern numbers : 1 to 300
03	Segment number error Only when using communication (The error code is stored in register B0105.)	The specified segment number does not exist. Segment numbers : 1 to 99
11	Pattern information read error Only when using communication (The error code is stored in register B0005.)	Pattern read was attempted during pattern read. Pattern read was excuted when the parameters in “PRG” and “EDIT” program parameter submenus are displayed on the LCD.
12	Pattern information write error Only when using communication (The error code is stored in register B0005.)	Pattern wirte was attempted during pattern wirte. Pattern write was excuted when the parameters in “PRG” and “EDIT” program parameter submenus are displayed on the LCD.
21	Segment read error Only when using communication (The error code is stored in register B0105.)	Segment read was attempted during pattern read. Segment read was excuted when the parameters in the “PRG” and “EDIT” program parameter submenus are displayed on the LCD.
22	Segment write error Only when using communication (The error code is stored in register B0105.)	The total number of segments exceeded 3000.
23	Segment insert error	During program operation, the total number of segments exceeded 3000 or numbers in a pattern exceeded 99, and therefore a new segment cannot be register or added. The specified segment is missing.
24	Segment delete error	Any segment cannot be deleted during program operation. The specifed segment is missing.
25	Exceeded segment count error	The number of segments exceeded 3000.
31	Pattern copy error Only when using communication (The error code is stored in register B0065.)	No pattern is present at the source or patterns already exist at the destination.
32	Pattern source specification error	No pattern is present at the source or program operation is being excuted when the source of pattern copy is specified.
33	Pattern destination specification error	Patterns already exist at the destination.
41	Pattern delete errror	At pattern delete operation, specified pattern does not exist or program operation is being excuted.
51	Event write error Only when using communication (The error code is stored in register B0105.)	The number of events exceeded 4000. Or the number of remaining events is less than 8. (Wirte is disabled when remaining settable events are less tha 8)

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8. Functions and Use of I Relays (UT750/UT550/UT520/UT551)

8.1 Overview

This chapter explains the functions and use of I relays.

I relays contain status information of errors, operation, and alarms. Contents of I relays can be read only by means of communication using a higher-level device. (Note that the I relays have the same information as the D registers but with I relays, some of the information is read-only.)

You can use I relays to perform:

- **Centralized monitoring through a display created with a higher-level device.**

8.2 Classification of I Relays

I relays are classified as shown below.

Table 8.1 Classification of I Relays

I relay No.	Type of status	Description	Remarks
1 to 192	Status	Bit information of I relays 1 to 192 are the same as that of D registers.	
193 to 384	ON status	Bit information of I relays 193 to 384 are the same as that of D registers.	When the status changes from OFF to ON, the corresponding relay is turned on for one control period.
385 to 576	OFF status	Bit information of I relays 385 to 576 are the same as that of D registers.	When the status changes from ON to OFF, the corresponding relay is turned on for one control period.

I relays have the same code names as the bits contained in the corresponding D registers, except for the ones listed below.

I relay No.	Code	Event
*0577 to 0580	CSPNO.0 to 3	SP number
*0593 to 0596	PIDNO1.1 to 3	PID number for Loop-1
*0609 to 0612	PIDNO2.0 to 3	PID number for Loop-2
0657 to 0661	TIM.1S to TIM.1M	1-second timer to 1-minute timer
0672 to 0674	PON to LP2	Power-on, front-panel lamp state for PV2 and LP2
0681 to 0687	DEV1- to DEV2+	Deviation state for Loop-1 and Loop-2

*: The information of I relays 0577 to 0612 is represented by 4-digit binary codes, from 0000 (0 in decimal) to 1000 (8 in decimal), which are formed by the bit combination of four I relays. The lowest-numbered I relay in each set signifies the LSB.

8.3 Status I Relays

The configuration of status I relay area is as shown below.

I relay No.	Category	Description	Remarks
1 to 16	Status	Input error (same as D0001)	
17 to 32		PV1 error (same as D0002)	
33 to 48		PV2 error (same as D0018)	
49 to 64		Error in calibration values or parameters (same as D0035)	
65 to 80		Loop-1 mode (same as D0008)	
81 to 96		Loop-2 mode (same as D0024)	
97 to 112		Alarm status (same as D0011)	
113 to 160	Do not use.		
161 to 176	Status	Status of external contact inputs (same as D0033)	
177 to 192		Status of expanded external contact inputs (same as D0034)	

NOTE

- I relays 1 to 192 store on-off status information and are normally read for on-off status information.
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0009 to specify the RJC1ERR.st relay (I relay No.: 0009).
- In the area for I relays 1 to 720, it is prohibited to write data to I relays with blank cells in I relay map tables. If you attempt to do so, the UT750/UT550/UT520/UT551 may not operate properly.

Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
1	AD1ERR.st	33	PV2ADC.st	65	A/M1.st	97	ALM11.st	129		161	DI1.st
2	AD2ERR.st*1	34	PV2BO.st	66	R/L.st	98	ALM12.st	130		162	DI2.st
3	AD3ERR.st	35	RJC2ERR.st	67	R/S.st	99	ALM13.st	131		163	DI3.st
4		36		68		100		132		164	DI4.st
5	AD1BO.st	37	PV2+over.st	69	CAS.st	101	ALM14.st	133		165	DI5.st
6	AD2BO.st*1	38	PV2-over.st	70	AUT.st	102	OR1.st	134		166	DI6.st
7	AD3BO.st	39		71	MAN.st	103		135		167	DI7.st
8		40		72		104		136		168	DI8.st*2
9	RJC1ERR.st	41	RSP2ADC.st	73		105	ALM21.st	137		169	DP1.st*1
10	RJC2ERR.st*1	42	RSP2BO.st	74		106	ALM22.st	138		170	DP2.st*1
11		43		75		107	ALM23.st	139		171	MG1.st*1
12	VLV.ATERR.st	44		76		108		140		172	MG2.st*1
13	VLV.BOUT.st	45	C.RSP2ADC.st	77		109	ALM24.st	141		173	MG3.st*1
14		46	C.RSP2BO.st	78		110	OR2.st	142		174	MG4.st*1
15		47	AT2ERR.st	79	AT1.st	111		143		175	
16		48		80		112		144		176	
17	PV1ADC.st	49	CALB.E.st	81	A/M2.st	113		145		177	RDI101.st*1
18	PV1BO.st	50	UCALB.E.st	82	R/L2.st	114		146		178	RDI102.st*1
19	RJC1ERR.st	51	USER.E.st	83		115		147		179	RDI103.st*1
20		52		84		116		148		180	RDI104.st*1
21	PV1+over.st	53	UTMD.st	85		117		149		181	RDI105.st*1
22	PV1-over.st	54	RANGE.st	86		118		150		182	RDI106.st*1
23		55	SETUP.st	87		119		151		183	RDI107.st*1
24		56		88		120		152		184	RDI108.st*1
25	RSP1ADC.st	57	PARA.E.st	89		121		153		185	RDI201.st*1
26	RSP1BO.st	58	MODE.E.st	90		122		154		186	RDI202.st*1
27		59		91		123		155		187	RDI203.st*1
28		60		92		124		156		188	RDI204.st*1
29	C.RSP1ADC.st	61	EEP.E.st*2	93		125		157		189	RDI205.st*1
30	C.RSP1BO.st	62		94		126		158		190	RDI206.st*1
31	AT1ERR.st	63	SYSTEM.E.st	95	AT2.st	127		159		191	RDI207.st*1
32		64		96		128		160		192	RDI208.st*1

*1: UT750 only
*2: UT550/UT520/UT551 only

(Note) When the contact input registration parameter S/R of setup parameters is set to “0”, you can write to I relay R/S via communication.

8.4 ON-Status I Relays

The configuration of ON-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
193 to 208	ON-status	Input error (same as D0001)	
209 to 224		PV1 error (same as D0002)	
225 to 240		PV2 error (same as D0018)	
241 to 256		Error in calibration values or parameters (same as D0035)	
257 to 272		Loop-1 mode (same as D0008)	
273 to 288		Loop-2 mode (same as D0024)	
289 to 304		Alarm status (same as D0011)	
305 to 352	Do not use.		
353 to 368	ON-status	Status of external contact inputs (same as D0033)	
369 to 384		Status of expanded external contact inputs (same as D0034)	

NOTE

- The ON-status I relays 193 to 384 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0201 to specify the RJC1ERR.on relay (I relay No.: 0201).

ON-Status Area											
No.	I relay No.	No.	I relay No.	No.	I relay No.	No.	I relay No.	No.	I relay No.	No.	I relay No.
193	AD1ERR.on	225	PV2ADC.on	257	A/M1.on	289	ALM11.on	321		353	DI1.on
194	AD2ERR.on*1	226	PV2BO.on	258	R/L.on	290	ALM12.on	322		354	DI2.on
195	AD3ERR.on	227	RJC2ERR.on	259	R/S.on	291	ALM13.on	323		355	DI3.on
196		228		260		292		324		356	DI4.on
197	AD1BO.on	229	PV2+over.on	261	CAS.on	293	ALM14.on	325		357	DI5.on
198	AD2BO.on*1	230	PV2-over.on	262	AUT.on	294	OR1.on	326		358	DI6.on
199	AD3BO.on	231		263	MAN.on	295		327		359	DI7.on
200		232		264		296		328		360	DI8.on*2
201	RJC1ERR.on	233	RSP2ADC.on	265		297	ALM21.on	329		361	DP1.on*1
202	RJC2ERR.on*1	234	RSP2BO.on	266		298	ALM22.on	330		362	DP2.on*1
203		235		267		299	ALM23.on	331		363	MG1.on*1
204	VLV.ATERR.on	236		268		300		332		364	MG2.on*1
205	VLV.BOUT.on	237	C.RSP2ADC.on	269		301	ALM24.on	333		365	MG3.on*1
206		238	C.RSP2BO.on	270		302	OR2.on	334		366	MG4.on*1
207		239	AT2ERR.on	271	AT1.on	303		335		367	
208		240		272		304		336		368	
209	PV1ADC.on	241	CALB.E.on	273	A/M2.on	305		337		369	RDI101.on*1
210	PV1BO.on	242	UCALB.E.on	274	R/L.on	306		338		370	RDI102.on*1
211	RJC1ERR.on	243	USER.E.on	275		307		339		371	RDI103.on*1
212		244		276		308		340		372	RDI104.on*1
213	PV1+over.on	245	UTMD.on	277		309		341		373	RDI105.on*1
214	PV1-over.on	246	RANGE.on	278		310		342		374	RDI106.on*1
215		247	SETUP.on	279		311		343		375	RDI107.on*1
216		248		280		312		344		376	RDI108.on*1
217	RSP1ADC.on	249	PARA.E.on	281		313		345		377	RDI201.on*1
218	RSP1BO.on	250	MODE.E.on	282		314		346		378	RDI202.on*1
219		251		283		315		347		379	RDI203.on*1
220		252		284		316		348		380	RDI204.on*1
221	C.RSP1ADC.on	253	EEP.E.on*2	285		317		349		381	RDI205.on*1
222	C.RSP1BO.on	254		286		318		350		382	RDI206.on*1
223	AT1ERR.on	255	SYSTEM.E.on	287	AT2.on	319		351		383	RDI207.on*1
224		256		288		320		352		384	RDI208.on*1

*1: UT750 only
*2: UT550/UT520/UT551 only

8.5 OFF-Status I Relays

The configuration of OFF-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
385 to 400	OFF-status	Input error (same as D0001)	
401 to 416		PV1 error (same as D0002)	
417 to 432		PV2 error (same as D0018)	
433 to 448		Error in calibration values or parameters (same as D0035)	
449 to 464		Loop-1 mode (same as D0008)	
465 to 480		Loop-2 mode (same as D0024)	
481 to 496		Alarm status (same as D0011)	
497 to 544	Do not use.		
545 to 560	OFF-status	Status of external contact inputs (same as D0033)	
561 to 576		Status of expanded external contact inputs (same as D0034)	

NOTE

- The OFF-status I relays 385 to 576 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0393 to specify the RJC1ERR.off relay (I relay No.: 0393).

OFF-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
385	AD1ERR.off	417	PV2ADC.off	449	A/M1.off	481	ALM11.off	513		545	DI1.off
386	AD2ERR.off	418	PV2BO.off	450	R/L.off	482	ALM12.off	514		546	DI2.off
387	AD3ERR.off	419	RJC2ERR.off	451	R/S.off	483	ALM13.off	515		547	DI3.off
388		420		452		484		516		548	DI4.off
389	AD1BO.off	421	PV2+over.off	453	CAS.off	485	ALM14.off	517		549	DI5.off
390	AD2BO.off	422	PV2-over.off	454	AUT.off	486	OR1.off	518		550	DI6.off
391	AD3BO.off	423		455	MAN.off	487		519		551	DI7.off
392		424		456		488		520		552	DI8.off*2
393	RJC1ERR.off	425	RSP2ADC.off	457		489	ALM21.off	521		553	DP1.off*1
394	RJC2ERR.off	426	RSP2BO.off	458		490	ALM22.off	522		554	DP2.off*1
395		427		459		491	ALM23.off	523		555	MG1.off*1
396	VLV.ATERR.off	428		460		492		524		556	MG2.off*1
397	VLV.BOUT.off	429	C.RSP2ADC.off	461		493	ALM24.off	525		557	MG3.off*1
398		430	C.RSP2BO.off	462		494	OR2.off	526		558	MG4.off*1
399		431	AT2ERR.off	463	AT1.off	495		527		559	
400		432		464		496		528		560	
401	PV1ADC.off	433	CALB.E.off	465	A/M2.off	497		529		561	RDI101.off*1
402	PV1BO.off	434	UCALB.E.off	466	R/L.off	498		530		562	RDI102.off*1
403	RJC1ERR.off	435	USER.E.off	467		499		531		563	RDI103.off*1
404		436		468		500		532		564	RDI104.off*1
405	PV1+over.off	437	UTMD.off	469		501		533		565	RDI105.off*1
406	PV1-over.off	438	RANGE.off	470		502		534		566	RDI106.off*1
407		439	SETUP.off	471		503		535		567	RDI107.off*1
408		440		472		504		536		568	RDI108.off*1
409	RSP1ADC.off	441	PARA.E.off	473		505		537		569	RDI201.off*1
410	RSP1BO.off	442	MODE.E.off	474		506		538		570	RDI202.off*1
411		443		475		507		539		571	RDI203.off*1
412		444		476		508		540		572	RDI204.off*1
413	C.RSP1ADC.off	445	EEP.E.off*2	477		509		541		573	RDI205.off*1
414	C.RSP1BO.off	446		478		510		542		574	RDI206.off*1
415	AT1ERR.off	447	SYSTEM.E.off	479	AT2.off	511		543		575	RDI207.off*1
416		448		480		512		544		576	RDI208.off*1

*1: UT750 only
*2: UT550/UT520/UT551 only

8.6 Status I Relays for Alarm, Timer, Power-on Flags, Reverse Status, and Others

The following table shows the configuration of status I relays for alarm, timer, power-on flag, etc.

I relay No.	Category	Description
577 to 592	Status/Reverse status	Current cascade SP number (Note 1) (same as D0010)
593 to 608		Current loop-1 PID number (Note 1) (same as D0009)
609 to 624		Current loop-2 PID number (Note 1) (same as D0025)
625 to 656		Do not use.
657 to 672		1-second, 5-second, 10-second and 1-minute timers (Note 2)
673 to 688		Status of PV2, LP2, deviation lamps and DI reverse status (Note 3)
689 to 704		Status of alarm outputs (same as D0036)
705 to 720	Do not use.	
721 to 2048	User area (Note 4)	Area where you can freely write and read

Note 1: The information of these I relays is represented by 4-digit binary codes, from 0000 (0 in decimal) to 1000 (8 in decimal), which are formed by the bit combination of four I relays. The lowest-numbered I relay in each set signifies the LSB.
Note 2: The 1-second, 5-second, 10-second and 1-minute timer functions are available with I relays only.
Note 3: This information represents the status of the UT750/UT550/UT520/UT551's front-panel lamps. The relay turns on (flag "1") when the lamp is lit. DI reverse status (662 to 664, 675 to 679) is for UT551 only.
Note 4: Although the I Relay Map tables do not contain I relays 769 through 2048 within the user area, you can read from and write to these I relays by means of communication.

NOTE

- In I Relay Map tables, the areas with no I relay code names are not in use.
- Do not write to or read from these unused I relay areas; doing so may damage the internal data of UT750/UT550/UT520/UT551.

I relays except for the followings have the same codes as the bit construction of D registers.

I relay No.	Category	Description
0577 to 0580	CSPNO.0 to CSPNO.3	SP number
0593 to 0596	PIDNO1.0 to PIDNO1.3	PID number for Loop-1
0609 to 0612	PIDNO2.0 to PIDNO2.3	PID number for Loop-2
0657 to 0661	TIM.1S to TIM.1M	1-second timer to 1-minute timer
662 to 664, 675 to 679	DI1 to DI8	DI reverse status (UT551 only)
665	V.GUE	Turns on when the valve position estimating type is selected.
0672 to 0674	PON to LP2	Power-on, front-panel lamp state for PV2 and LP2
0681 to 0687	DEV1- to DEV2+	Deviation state for Loop-1 and Loop-2

[TIP] • I relays 1 to 576 and 689 to 701 have the same bit information, both in terms of code and contents, as the D registers for read-only information.
• Refer to section “1.4.1 Process Data Area (Read-only)” for the description.

I relays 577 to 687 store the on-off statuses of SP number, PID number, timer flag, power-on flags, etc.

NOTE

- When specifying an I relay number for communication, begin the number with the character “I.”
- For example, set I0657 to specify the TIM, 1S relay (I relay No. : 0657)

Area for SP and PID Numbers and the Statuses of Timer, Power-on and Alarm Flags, plus User Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
577	CSPNO.0.st	609	PIDNO2.0.st	641		673	PV2.st	705		737	
578	CSPNO.1.st	610	PIDNO2.1.st	642		674	LP2.st*2	706		738	
579	CSPNO.2.st	611	PIDNO2.2.st	643		675	DI4.nst (NOTE)	707		739	
580	CSPNO.3.st	612	PIDNO2.3.st	644		676	DI5.nst (NOTE)	708		740	
581		613		645		677	DI6.nst (NOTE)	709		741	
582		614		646		678	DI7.nst (NOTE)	710		742	
583		615		647		679	DI8.nst (NOTE)	711		743	
584		616		648		680		712		744	
585		617		649		681	DEV1-.st	713		745	
586		618		650		682	DEV1Z.st	714		746	
587		619		651		683	DEV1+.st	715		747	
588		620		652		684		716		748	
589		621		653		685	DEV2-.st	717		749	
590		622		654		686	DEV2Z.st	718		750	
591		623		655		687	DEV2+.st	719		751	
592		624		656		688		720		752	
593	PIDNO1.0.st	625		657	TIM.1S.st	689	ALO11.st	721		753	
594	PIDNO1.1.st	626		658	TIM.5S.st	690	ALO12.st	722		754	
595	PIDNO1.2.st	627		659	TIM.10S.st	691	ALO13.st	723		755	
596	PIDNO1.3.st	628		660		692		724		756	
597		629		661	TIM.1M.st	693	ALO14.st	725		757	
598		630		662	DI1.nst (NOTE)	694		726		758	
599		631		663	DI2.nst (NOTE)	695		727		759	
600		632		664	DI3.nst (NOTE)	696		728		760	
601		633		665	V.GUE.st	697	ALO21.st	729		761	
602		634		666		698	ALO22.st	730		762	
603		635		667		699	ALO23.st	731		763	
604		636		668		700		732		764	
605		637		669		701	ALO24.st	733		765	
606		638		670		702		734		766	
607		639		671		703		735		767	
608		640		672	PON.st	704		736		768	

*2: UT550/UT520 only

You can freely write to or read from the I relays 721 to 2048.

NOTE : UT551 only

8.6.1 User Area

I relay No.	Category	Description
721 to 2048	User area	You can read/write data from/to the area for I relays 721 to 2048 via communication. That is, you can use the area freely without affecting the control function of UT750/UT550/UT520/UT551.

8.6.2 Timer Function

A timer function that repeats ON/OFF action at a constant time interval is available using I relays. One-second, 5-second, 10-second, and 1-minute timers are offered.

NOTE

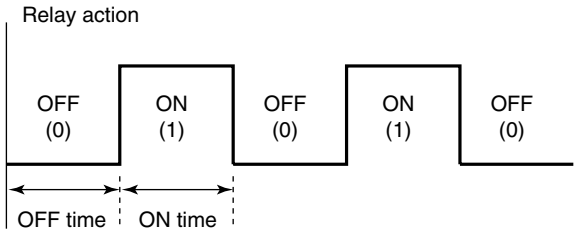
The timer function is set up using the optional LL200 PC-based Custom Computation Building Tool.

The following table shows the timer values and their corresponding I relay codes and numbers.

Timer value	Code	I relay No.	Description
1 second	TIM.1S.st	657	Repeats 1-second ON state and 1-second OFF state.
5 seconds	TIM.5S.st	658	Repeats 5-second ON state and 5-second OFF state.
10 seconds	TIM.10S.st	659	Repeats 10-second ON state and 10-second OFF state.
1 minute	TIM.1M.st	661	Repeats 1-minute ON state and 1-minute OFF state.

When assigned to a contact output, a timer signal can be output to an external device.

The timer I relay action is shown below.



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9. Functions and Use of I Relays (UT450/UT420)

9.1 Overview

This chapter explains the functions and use of I relays.

I relays contain status information of errors, operation, and alarms. Contents of I relays can be read only by means of communication using a higher-level device. (Note that the I relays have the same information as the D registers but with I relays some of the information is read-only.)

You can use I relays to perform:

- **Centralized monitoring through a display created with a higher-level device.**

9.2 Classification of I Relays

I relays are classified as shown below.

Table 9.1 Classification of I Relays

I relay No.	Type of status	Description	Remarks
1 to 192	Status	Bit information of I relays 1 to 192 are the same as that of D registers.	
193 to 384	ON status	Bit information of I relays 193 to 384 are the same as that of D registers.	When the status changes from OFF to ON, the corresponding relay is turned on for one control period.
385 to 576	OFF status	Bit information of I relays 385 to 576 are the same as that of D registers.	When the status changes from ON to OFF, the corresponding relay is turned on for one control period.

9.3 Status I Relays

The configuration of status I relay area is as shown below.

I relay No.	Category	Description	Remarks
1 to 16	Status	Input error (same as D0001)	
17 to 32		PV error (same as D0002)	
33 to 48		Do not use.	
49 to 64		Error in calibration values or parameters (same as D0035)	
65 to 80		Mode (same as D0008)	
81 to 96		Do not use.	
97 to 112		Alarm status (same as D0011)	
113 to 160	Do not use.		
161 to 176			
177 to 192			

NOTE

- I relays 1 to 192 store on-off status information and are normally read for on-off status information.
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0019 to specify the RJCERR.st relay (I relay No.: 0019).
- In the area for I relays 1 to 720, it is prohibited to write data to I relays with blank cells in I relay map tables. If you attempt to do so, the UT450/UT420 may not operate properly.

Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
1	AD1ERROR.st	33		65	AUT/MAN.st	97	ALM1.st	129		161	DI1.st
2		34		66	REM/LCL.st	98	ALM2.st	130		162	DI2.st
3	AD3ERROR.st	35		67	RUN/STOP.st	99	ALM3.st	131		163	DI3.st
4		36		68		100		132		164	DI4.st
5	AD1BO.st	37		69		101	ALM4.st	133		165	DI5.st
6		38		70		102	OR.st	134		166	DI6.st
7	AD3BO.st	39		71		103		135		167	
8		40		72		104		136		168	DI8.st
9	RJCERR.st	41		73		105		137		169	
10		42		74		106		138		170	
11		43		75		107		139		171	
12	VLV.ATERR.st	44		76		108		140		172	
13	VLV.BOUT.st	45		77		109		141		173	
14		46		78		110		142		174	
15		47		79	AT.st	111		143		175	
16		48		80		112		144		176	
17	PVADC.st	49	CALB.E.st	81		113		145		177	
18	PVBO.st	50		82		114		146		178	
19	RJCERR.st	51		83		115		147		179	
20		52		84		116		148		180	
21	PV+over.st	53		85		117		149		181	
22	PV-over.st	54	RANGE.st	86		118		150		182	
23		55	SETUP.st	87		119		151		183	
24		56		88		120		152		184	
25	RSP.ADC.st	57	PARA.E.st	89		121		153		185	
26	RSP.BO.st	58	MODE.E.st	90		122		154		186	
27		59		91		123		155		187	
28		60		92		124		156		188	
29		61	EEP.E.st	93		125		157		189	
30		62		94		126		158		190	
31	AT.E.st	63	SYSTEM.E.st	95		127		159		191	
32		64		96		128		160		192	

NOTE : When the DI function selection parameter DIS of setup parameters is set to 0 , you can write to I relay RUN/STOP via communication.

9.4 ON-Status I Relays

The configuration of ON-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
193 to 208	ON-status	Input error (same as D0001)	
209 to 224		PV error (same as D0002)	
225 to 240		Do not use.	
241 to 256		Error in calibration values or parameters (same as D0035)	
257 to 272		Mode (same as D0008)	
273 to 288		Do not use.	
289 to 304		Alarm status (same as D0011)	
305 to 352	Do not use.		
353 to 368			
369 to 384			

NOTE

- The ON-status I relays 193 to 384 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0211 to specify the RJCERR.on relay (I relay No.: 0211).

ON-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
193	AD1ERROR.on	225		257	AUT/MAN.on	289	ALM1.on	321		353	DI1.on
194		226		258	REM/LCL.on	290	ALM2.on	322		354	DI2.on
195	AD3ERROR.on	227		259	RUN/STOP.on	291	ALM3.on	323		355	DI3.on
196		228		260		292		324		356	DI4.on
197	AD1BO.on	229		261		293	ALM4.on	325		357	DI5.on
198		230		262		294	OR.on	326		358	DI6.on
199	AD3BO.on	231		263		295		327		359	
200		232		264		296		328		360	DI8.on
201	RJCERR.on	233		265		297		329		361	
202		234		266		298		330		362	
203		235		267		299		331		363	
204	VLV.ATERR.on	236		268		300		332		364	
205	VLV.BOUT.on	237		269		301		333		365	
206		238		270		302		334		366	
207		239		271	AT.on	303		335		367	
208		240		272		304		336		368	
209	PVADC.on	241	CALB.E.on	273		305		337		369	
210	PVBO.on	242		274		306		338		370	
211	RJCERR.on	243		275		307		339		371	
212		244		276		308		340		372	
213	PV+over.on	245		277		309		341		373	
214	PV-over.on	246	RANGE.on	278		310		342		374	
215		247	SETUP.on	279		311		343		375	
216		248		280		312		344		376	
217	RSP.ADC.on	249	PARA.E.on	281		313		345		377	
218	RSP.BO.on	250	MODE.E.on	282		314		346		378	
219		251		283		315		347		379	
220		252		284		316		348		380	
221		253	EEP.E.on	285		317		349		381	
222		254		286		318		350		382	
223	AT.E.on	255	SYSTEM.E.on	287		319		351		383	
224		256		288		320		352		384	

9.5 OFF-Status I Relays

The configuration of OFF-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
385 to 400	OFF-status	Input error (same as D0001)	
401 to 416		PV error (same as D0002)	
417 to 432		Do not use.	
433 to 448		Error in calibration values or parameters (same as D0035)	
449 to 464		Mode (same as D0008)	
465 to 480		Do not use.	
481 to 496		Alarm status (same as D0011)	
497 to 544	Do not use.		
545 to 560			
561 to 576			

NOTE

- The OFF-status I relays 385 to 576 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0403 to specify the RJCERR.off relay (I relay No.: 0403).

OFF-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
385	AD1ERROR.off	417		449	AUT/MAN.off	481	ALM1.off	513		545	DI1.off
386		418		450	REM/LCL.off	482	ALM2.off	514		546	DI2.off
387	AD3ERROR.off	419		451	RUN/STOP.off	483	ALM3.off	515		547	DI3.off
388		420		452		484		516		548	DI4.off
389	AD1BO.off	421		453		485	ALM4.off	517		549	DI5.off
390		422		454		486	OR.off	518		550	DI6.off
391	AD3BO.off	423		455		487		519		551	
392		424		456		488		520		552	DI8.off
393	RJCERR.off	425		457		489		521		553	
394		426		458		490		522		554	
395		427		459		491		523		555	
396	VLV.ATERR.off	428		460		492		524		556	
397	VLV.BOUT.off	429		461		493		525		557	
398		430		462		494		526		558	
399		431		463	AT.off	495		527		559	
400		432		464		496		528		560	
401	PVADC.off	433	CALB.E.off	465		497		529		561	
402	PVBO.off	434		466		498		530		562	
403	RJCERR.off	435		467		499		531		563	
404		436		468		500		532		564	
405	PV+over.off	437		469		501		533		565	
406	PV-over.off	438	RANGE.off	470		502		534		566	
407		439	SETUP.off	471		503		535		567	
408		440		472		504		536		568	
409	RSP.ADC.off	441	PARA.E.off	473		505		537		569	
410	RSP.BO.off	442	MODE.E.off	474		506		538		570	
411		443		475		507		539		571	
412		444		476		508		540		572	
413		445	EEP.E.off	477		509		541		573	
414		446		478		510		542		574	
415	AT.E.off	447	SYSTEM.E.off	479		511		543		575	
416		448		480		512		544		576	

9.6 I Relays in User Area

The configuration of I relays in the user area is as shown below.

I relay No.	Category	Description
577 to 592	Status	Current SP number (Note 1) (same as D0010)
593 to 608		Current PID number (Note 1) (same as D0009)
609 to 624		Do not use.
625 to 656		Do not use.
657 to 672		Power-on status
673 to 688		Deviation status
689 to 704		Status of alarm outputs (same as D0036)
705 to 720	Do not use.	
721 to 2048	User area (Note 2)	Area where you can freely write and read

Note 1: The information of these I relays is represented by 4-digit binary codes, from 0000 (0 in decimal) to 1000 (8 in decimal), which are formed by the bit combination of four I relays. The lowest-numbered I relay in each set signifies the LSB.
Note 2: Although the I Relay Map tables do not contain I relays 769 through 2048 within the user area, you can read from and write to these I relays by means of communication.

NOTE

- In I Relay Map tables, the areas with no I relay code names are not in use.
- Do not write to or read from these unused I relay areas; doing so may damage the internal data of UT450/UT420.

NOTE

When specifying an I relay number for communication, begin the number with the character “I.”

User Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
577	CSPNO.0.st	609		641		673		705		737	
578	CSPNO.1.st	610		642		674		706		738	
579	CSPNO.2.st	611		643		675		707		739	
580	CSPNO.3.st	612		644		676		708		740	
581		613		645		677		709		741	
582		614		646		678		710		742	
583		615		647		679		711		743	
584		616		648		680		712		744	
585		617		649		681	DEVI-.st	713		745	
586		618		650		682	DEVIZ.st	714		746	
587		619		651		683	DEVI+.st	715		747	
588		620		652		684		716		748	
589		621		653		685		717		749	
590		622		654		686		718		750	
591		623		655		687		719		751	
592		624		656		688		720		752	
593	PIDNO.0.st	625		657		689	ALO1.st	721		753	
594	PIDNO.1.st	626		658		690	ALO2.st	722		754	
595	PIDNO.2.st	627		659		691	ALO3.st	723		755	
596	PIDNO.3.st	628		660		692		724		756	
597		629		661		693	ALO4.st	725		757	
598		630		662		694		726		758	
599		631		663		695		727		759	
600		632		664		696		728		760	
601		633		665	V.GUE.st	697		729		761	
602		634		666		698		730		762	
603		635		667		699		731		763	
604		636		668		700		732		764	
605		637		669		701		733		765	
606		638		670		702		734		766	
607		639		671		703		735		767	
608		640		672	POWER.ON.st	704		736		768	

You can freely write to or read from the I relays 721 to 2048.

9.6.1 User Area

I relay No.	Category	Description
721 to 2048	User area	You can read/write data from/to the area for I relays 721 to 2048 via communication. That is, you can use the area freely without affecting the control function of UT450/UT420.

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10. Functions and Use of I Relays (UT350/UT320,UT351/UT321)

10.1 Overview

This chapter explains the functions and use of I relays.

I relays contain status information of errors, operation, and alarms. Contents of I relays can be read only by means of communication using a higher-level device. (Note that the I relays have the same information as the D registers but with I relays some of the information is read-only.)

You can use I relays to perform:

- **Centralized monitoring through a display created with a higher-level device.**

10.2 Classification of I Relays

I relays are classified as shown below.

Table 10.1 Classification of I Relays

I relay No.	Type of status	Description	Remarks
1 to 192	Status	Bit information of I relays 1 to 192 are the same as that of D registers.	
193 to 384	ON status	Bit information of I relays 193 to 384 are the same as that of D registers.	When the status changes from OFF to ON, the corresponding relay is turned on for one control period.
385 to 576	OFF status	Bit information of I relays 385 to 576 are the same as that of D registers.	When the status changes from ON to OFF, the corresponding relay is turned on for one control period.

10.3 Status I Relays

The configuration of status I relay area is as shown below.

I relay No.	Category	Description	Remarks
1 to 16	Status	Input error (same as D0001)	
17 to 32		PV error (same as D0002)	
33 to 48		Do not use.	
49 to 64		Error in calibration values or parameters (same as D0035)	
65 to 80		Mode (same as D0008)	
81 to 96		Do not use.	
97 to 112		Alarm status (same as D0011)	
113 to 160	Do not use.		
161 to 176			
177 to 192			

NOTE

- I relays 1 to 192 store on-off status information and are normally read for on-off status information.
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0019 to specify the RJCERR.st relay (I relay No.: 0019).
- In the area for I relays 1 to 720, it is prohibited to write data to I relays with blank cells in I relay map tables. If you attempt to do so, the UT350/UT320/UT351/UT321 may not operate properly.

Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
1	ADERROR.st	33		65	AUT/MAN.st	97	ALM1.st	129		161	
2		34		66		98	ALM2.st	130		162	
3		35		67	S/R.st	99	ALM3.st	131		163	
4		36		68		100		132		164	
5		37		69		101		133		165	
6		38		70		102	OR.st	134		166	
7		39		71		103		135		167	
8		40		72		104		136		168	
9		41		73		105		137		169	
10		42		74		106		138		170	
11		43		75		107		139		171	
12		44		76		108		140		172	
13		45		77		109		141		173	
14		46		78		110		142		174	
15		47		79	AT.st	111		143		175	
16		48		80		112		144		176	
17		49	CALB.E.st	81		113		145		177	
18	PVBO.st	50		82		114		146		178	
19	RJCERR.st	51		83		115		147		179	
20		52		84		116		148		180	
21	PV+over.st	53		85		117		149		181	
22	PV-over.st	54		86		118		150		182	
23		55	SETUP.st	87		119		151		183	
24		56		88		120		152		184	
25		57	PARA.E.st	89		121		153		185	
26		58		90		122		154		186	
27		59		91		123		155		187	
28		60		92		124		156		188	
29		61	EEP.E.st	93		125		157		189	
30		62		94		126		158		190	
31	AT.E.st	63	SYSTEM.E.st	95		127		159		191	
32		64		96		128		160		192	

NOTE : When the DI function selection parameter DIS of setup parameters is set to OFF , 1 , 2 , 3 , you can write to I relay R/S by means of communication.

10.4 ON-Status I Relays

The configuration of ON-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
193 to 208	ON-status	Input error (same as D0001)	
209 to 224		PV error (same as D0002)	
225 to 240		Do not use.	
241 to 256		Error in calibration values or parameters (same as D0035)	
257 to 272		Mode (same as D0008)	
273 to 288		Do not use.	
289 to 304		Alarm status (same as D0011)	
305 to 352	Do not use.		
353 to 368			
369 to 384			

NOTE

- The ON-status I relays 193 to 384 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0211 to specify the RJCERR.on relay (I relay No.: 0211).

ON-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
193	ADERROR.on	225		257	AUT/MAN.on	289	ALM1.on	321		353	
194		226		258		290	ALM2.on	322		354	
195		227		259	S/R.on	291	ALM3.on	323		355	
196		228		260		292		324		356	
197		229		261		293		325		357	
198		230		262		294	OR.on	326		358	
199		231		263		295		327		359	
200		232		264		296		328		360	
201		233		265		297		329		361	
202		234		266		298		330		362	
203		235		267		299		331		363	
204		236		268		300		332		364	
205		237		269		301		333		365	
206		238		270		302		334		366	
207		239		271	AT.on	303		335		367	
208		240		272		304		336		368	
209		241	CALB.E.on	273		305		337		369	
210	PVBO.on	242		274		306		338		370	
211	RJCERR.on	243		275		307		339		371	
212		244		276		308		340		372	
213	PV+over.on	245		277		309		341		373	
214	PV-over.on	246		278		310		342		374	
215		247	SETUP.on	279		311		343		375	
216		248		280		312		344		376	
217		249	PARA.E.on	281		313		345		377	
218		250		282		314		346		378	
219		251		283		315		347		379	
220		252		284		316		348		380	
221		253	EEP.E.on	285		317		349		381	
222		254		286		318		350		382	
223	AT.E.on	255	SYSTEM.E.on	287		319		351		383	
224		256		288		320		352		384	

10.5 OFF-Status I Relays

The configuration of OFF-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
385 to 400	OFF-status	Input error (same as D0001)	
401 to 416		PV error (same as D0002)	
417 to 432		Do not use.	
433 to 448		Error in calibration values or parameters (same as D0035)	
449 to 464		Mode (same as D0008)	
465 to 480		Do not use.	
481 to 496		Alarm status (same as D0011)	
497 to 544	Do not use.		
545 to 560			
561 to 576			

NOTE

- The OFF-status I relays 385 to 576 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0403 to specify the RJCERR.off relay (I relay No.: 0403).

OFF-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
385	ADERROR.off	417		449	AUT/MAN.off	481	ALM1.off	513		545	
386		418		450		482	ALM2.off	514		546	
387		419		451	S/R.off	483	ALM3.off	515		547	
388		420		452		484		516		548	
389		421		453		485		517		549	
390		422		454		486	OR.off	518		550	
391		423		455		487		519		551	
392		424		456		488		520		552	
393		425		457		489		521		553	
394		426		458		490		522		554	
395		427		459		491		523		555	
396		428		460		492		524		556	
397		429		461		493		525		557	
398		430		462		494		526		558	
399		431		463	AT.off	495		527		559	
400		432		464		496		528		560	
401		433	CALB.E.off	465		497		529		561	
402	PVBO.off	434		466		498		530		562	
403	RJCERR.off	435		467		499		531		563	
404		436		468		500		532		564	
405	PV+over.off	437		469		501		533		565	
406	PV-over.off	438		470		502		534		566	
407		439	SETUP.off	471		503		535		567	
408		440		472		504		536		568	
409		441	PARA.E.off	473		505		537		569	
410		442		474		506		538		570	
411		443		475		507		539		571	
412		444		476		508		540		572	
413		445	EEP.E.off	477		509		541		573	
414		446		478		510		542		574	
415	AT.E.off	447	SYSTEM.E.off	479		511		543		575	
416		448		480		512		544		576	

10.6 Status I Relays in User Area

The configuration of status I relays in the user area is as shown below.

I relay No.	Category	Description
577 to 592	Do not use.	
593 to 608		
609 to 624		
625 to 656		
657 to 672		
673 to 688		
689 to 704		
705 to 720		
721 to 784	User area (Note)	Area where you can freely write and read

Note: Although the I Relay Map tables do not contain I relays 769 through 784 within the user area, you can read from and write to these I relays by means of communication.

NOTE

- In I Relay Map tables, the areas with no I relay code names are not in use.
- Do not write to or read from these unused I relay areas; doing so may damage the internal data of UT350/UT320/UT351/UT321.

NOTE

When specifying an I relay number for communication, begin the number with the character "I."

User Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
577		609		641		673		705		737	
578		610		642		674		706		738	
579		611		643		675		707		739	
580		612		644		676		708		740	
581		613		645		677		709		741	
582		614		646		678		710		742	
583		615		647		679		711		743	
584		616		648		680		712		744	
585		617		649		681		713		745	
586		618		650		682		714		746	
587		619		651		683		715		747	
588		620		652		684		716		748	
589		621		653		685		717		749	
590		622		654		686		718		750	
591		623		655		687		719		751	
592		624		656		688		720		752	
593		625		657		689		721		753	
594		626		658		690		722		754	
595		627		659		691		723		755	
596		628		660		692		724		756	
597		629		661		693		725		757	
598		630		662		694		726		758	
599		631		663		695		727		759	
600		632		664		696		728		760	
601		633		665		697		729		761	
602		634		666		698		730		762	
603		635		667		699		731		763	
604		636		668		700		732		764	
605		637		669		701		733		765	
606		638		670		702		734		766	
607		639		671		703		735		767	
608		640		672		704		736		768	

You can freely write to or read from the I relays 721 to 784.

10.6.1 User Area

I relay No.	Category	Description
721 to 784	User area	You can read/write data from/to the area for I relays 721 to 784 via communication. That is, you can use the area freely without affecting the control function of UT350/UT320/UT351/UT321.

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11. Functions and Use of I Relays (UP750/UP550)

11.1 Overview

This chapter explains the functions and use of I relays.

I relays contain status information of errors, operation, and alarms. Contents of I relays can be read only by means of communication using a higher-level device. (Note that I relays have the same information as the D registers but with I relays some of the information is read-only.)

You can use I relays to perform:

- **Centralized monitoring through a display created with a higher-level device.**

11.2 Classification of I Relays

I relays are classified as shown below.

Table 11.1 Classification of I Relays

I relay No.	Type of status	Description	Remarks
1 to 192	Status	Bit information of I relays 1 to 192 are the same as that of D registers.	
193 to 384	ON status	Bit information of I relays 193 to 384 are the same as that of D registers.	When the status changes from OFF to ON, the corresponding relay is turned on for one control period.
385 to 576	OFF status	Bit information of I relays 385 to 576 are the same as that of D registers.	When the status changes from ON to OFF, the corresponding relay is turned on for one control period.

I relays have the same code names as the bits contained in the corresponding D registers, except for the ones listed below.

I relay No.	Code	Event
*0593 to 0596	PIDNO1.0 to 3	PID number for Loop-1
*0609 to 0612	PIDNO2.0 to 3	PID number for Loop-2
0657 to 0661	TIM.1S to TIM.1M	1-second timer to 1-minute timer
0672 to 0674	PON, PV2	Power-on and PV2 lamp states
0681 to 0687	DV1- to DV2+	Deviation states for Loop-1 and Loop-2
0689 to 0693	ALO11 to ALO14	Status of alarm outputs

*: The information of I relays 0593 to 0612 is represented by 4-digit binary codes, from 0000 (0 in decimal) to 1000 (8 in decimal), which are formed by the bit combination of four I relays. The lowest-numbered I relay in each set signifies the LSB.

11.3 Status I Relays

The configuration of status I relay area is as shown below.

I relay No.	Category	Description	Remarks
1 to 16	Status	Input error (same as D0001)	
17 to 32		PV1 error (same as D0002)	
33 to 48		PV2 error (same as D0018)	
49 to 64		Error in calibration values or parameters (same as D0035)	
65 to 80		Loop-1 mode (same as D0008)	
81 to 96		Loop-2 mode (same as D0024)	
97 to 112		Alarm status (same as D0011)	
113 to 128		PV events 1 to 8 (same as D0012)	
129 to 160		Time events 1 to 16 (same as D0013/14)	
161 to 176		Status of external contact inputs (same as D0033)	
177 to 192		Status of expanded external contact inputs (same as D0034)	

NOTE

- I relays 1 to 192 store on-off status information and are normally read for on-off status information.
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0009 to specify the RJC1ERR.st relay (I relay No.: 0009).
- In the area for I relays 1 to 720, it is prohibited to write data to I relays with blank cells in I relay map tables. If you attempt to do so, the UP750/UP550 may not operate properly.

Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
1	AD1ERR.st	33	PV2ADC.st	65	A/M1.st	97	ALM11.st	129	TIME1.st	161	DI1.st
2	AD2ERR.st*1	34	PV2BO.st	66		98	ALM12.st	130	TIME2.st	162	DI2.st
3	AD3ERR.st	35	RJC2ERR.st	67		99	ALM13.st	131	TIME3.st	163	DI3.st
4		36		68		100		132		164	DI4.st
5	AD1BO.st	37	PV2+over.st	69		101	ALM14.st	133	TIME4.st	165	DI5.st
6	AD2BO.st*1	38	PV2-over.st	70		102	OR1.st	134	TIME5.st	166	DI6.st
7	AD3BO.st	39		71		103		135	TIME6.st	167	DI7.st
8		40		72		104		136		168	DI8.st*2
9	RJC1ERR.st	41		73	RESET.st	105		137	TIME7.st	169	DP1.st*1
10	RJC2ERR.st*1	42		74	PROG.st	106		138	TIME8.st	170	DP2.st*1
11		43		75	LOCAL.st	107		139		171	MG1.st
12	VLV.ATERR.st*2	44		76		108		140		172	MG2.st
13	VLV.BOUT.st*1	45		77	HOLD.st	109		141		173	MG3.st
14		46		78	WAIT.st	110	OR2.st	142		174	MG4.st
15		47	AT2ERR.st	79	AT1.st	111		143		175	
16		48		80		112		144		176	
17	PV1ADC.st	49	CALB.E.st	81	A/M2.st	113	PVE1.st	145	TIME9.st	177	RDI101.st*1
18	PV1BO.st	50	UCALB.E.st	82		114	PVE2.st	146	TIME10.st	178	RDI102.st*1
19	RJC1ERR.st	51	USER.E.st	83		115	PVE3.st	147	TIME11.st	179	RDI103.st*1
20		52		84		116		148		180	RDI104.st*1
21	PV1+over.st	53	UPMD.st	85		117	PVE4.st	149	TIME12.st	181	RDI105.st*1
22	PV1-over.st	54	RANGE.st	86		118	PVE5.st	150	TIME13.st	182	RDI106.st*1
23		55	SETUP.st	87		119	PVE6.st	151	TIME14.st	183	RDI107.st*1
24		56		88		120		152		184	RDI108.st*1
25		57	PARA.E.st	89	CAS/LSP.st	121	PVE7.st	153	TIME15.st	185	RDI201.st*1
26		58	MODE.E.st	90		122	PVE8.st	154	TIME16.st	186	RDI202.st*1
27		59	FILE.E.st	91		123		155	WEND.st	187	RDI203.st*1
28		60		92		124		156		188	RDI204.st*1
29		61		93		125		157	PTEND.st	189	RDI205.st*1
30		62		94		126		158	PTEND3.st	190	RDI206.st*1
31	AT1ERR.st	63	SYSTEM.E.st	95	AT2.st	127		159	PTEND5.st	191	RDI207.st*1
32		64		96		128		160		192	RDI208.st*1

*1: UP750 only
*2: UP550 only

11.4 ON-Status I Relays

The configuration of ON-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
193 to 208	ON-status	Input error (same as D0001)	
209 to 224		PV1 error (same as D0002)	
225 to 240		PV2 error (same as D0018)	
241 to 256		Error in calibration values or parameters (same as D0035)	
257 to 272		Loop-1 mode (same as D0008)	
273 to 288		Loop-2 mode (same as D0024)	
289 to 304		Alarm status (same as D0011)	
305 to 320		PV events 1 to 8 (same as D0012)	
321 to 352		Time events 1 to 16 (same as D0013/14)	
353 to 368		Status of external contact inputs (same as D0033)	
369 to 384		Status of expanded external contact inputs (same as D0034)	

NOTE

- The ON-status I relays 193 to 384 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0201 to specify the RJC1ERR.on relay (I relay No.: 0201).

ON-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
193	AD1ERR.on	225	PV2ADC.on	257	A/M1.on	289	ALM11.on	321	TIME1.on	353	DI1.on
194	AD2ERR.on*1	226	PV2BO.on	258		290	ALM12.on	322	TIME2.on	354	DI2.on
195	AD3ERR.on	227	RJC2ERR.on	259		291	ALM13.on	323	TIME3.on	355	DI3.on
196		228		260		292		324		356	DI4.on
197	AD1BO.on	229	PV2+over.on	261		293	ALM14.on	325	TIME4.on	357	DI5.on
198	AD2BO.on*1	230	PV2-over.on	262		294	OR1.on	326	TIME5.on	358	DI6.on
199	AD3BO.on	231		263		295		327	TIME6.on	359	DI7.on
200		232		264		296		328		360	DI8.on*2
201	RJC1ERR.on	233		265	RESET.on	297		329	TIME7.on	361	DP1.on*1
202	RJC2ERR.on*1	234		266	PROG.on	298		330	TIME8.on	362	DP2.on*1
203		235		267	LOCAL.on	299		331		363	MG1.on
204	VLV.ATERR.on*2	236		268		300		332		364	MG2.on
205	VLV.BOUT.on*2	237		269	HOLD.on	301		333		365	MG3.on
206		238		270	WAIT.on	302	OR2.on	334		366	MG4.on
207		239	AT2ERR.on	271	AT1.on	303		335		367	
208		240		272		304		336		368	
209	PV1ADC.on	241	CALB.E.on	273	A/M2.on	305	PVE1.on	337	TIME9.on	369	RDI101.on*1
210	PV1BO.on	242	UCALB.E.on	274		306	PVE2.on	338	TIME10.on	370	RDI102.on*1
211	RJC1ERR.on	243	USER.E.on	275		307	PVE3.on	339	TIME11.on	371	RDI103.on*1
212		244		276		308		340		372	RDI104.on*1
213	PV1+over.on	245	UTMD.on	277		309	PVE4.on	341	TIME12.on	373	RDI105.on*1
214	PV1-over.on	246	RANGE.on	278		310	PVE5.on	342	TIME13.on	374	RDI106.on*1
215		247	SETUP.on	279		311	PVE6.on	343	TIME14.on	375	RDI107.on*1
216		248		280		312		344		376	RDI108.on*1
217		249	PARA.E.on	281	CAS/LSP.on	313	PVE7.on	345	TIME15.on	377	RDI201.on*1
218		250	MODE.E.on	282		314	PVE8.on	346	TIME16.on	378	RDI202.on*1
219		251	FILE.E.on	283		315		347	WEND.on	379	RDI203.on*1
220		252		284		316		348		380	RDI204.on*1
221		253		285		317		349	PTEND.on	381	RDI205.on*1
222		254		286		318		350	PTEND3.on	382	RDI206.on*1
223	AT1ERR.on	255	SYSTEM.E.on	287	AT2.on	319		351	PTEND5.on	383	RDI207.on*1
224		256		288		320		352		384	RDI208.on*1

*1: UP750 only
*2: UP550 only

11.5 OFF-Status I Relays

The configuration of OFF-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
385 to 400	OFF-status	Input error (same as D0001)	
401 to 416		PV1 error (same as D0002)	
417 to 432		PV2 error (same as D0018)	
433 to 448		Error in calibration values or parameters (same as D0035)	
449 to 464		Loop-1 mode (same as D0008)	
465 to 480		Loop-2 mode (same as D0024)	
481 to 496		Alarm status (same as D0011)	
497 to 512		PV events 1 to 8 (same as D0012)	
513 to 544		Time events 1 to 16 (same as D0013/14)	
545 to 560		Status of external contact inputs (same as D0033)	
561 to 576		Status of expanded external contact inputs (same as D0034)	

NOTE

- The OFF-status I relays 385 to 576 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0393 to specify the RJC1ERR.off relay (I relay No.: 0393).

OFF-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
385	AD1ERR.off	417	PV2ADC.off	449	A/M1.off	481	ALM11.off	513	TIME1.off	545	DI1.off
386	AD2ERR.off*1	418	PV2BO.off	450		482	ALM12.off	514	TIME2.off	546	DI2.off
387	AD3ERR.off	419	RJC2ERR.off	451		483	ALM13.off	515	TIME3.off	547	DI3.off
388		420		452		484		516		548	DI4.off
389	AD1BO.off	421	PV2+over.off	453		485	ALM14.off	517	TIME4.off	549	DI5.off
390	AD2BO.off*1	422	PV2-over.off	454		486	OR1.off	518	TIME5.off	550	DI6.off
391	AD3BO.off	423		455		487		519	TIME6.off	551	DI7.off
392		424		456		488		520		552	DI8.off*2
393	RJC1ERR.off	425		457	RESET.off	489		521	TIME7.off	553	DP1.off*1
394	RJC2ERR.off*1	426		458	PROG.off	490		522	TIME8.off	554	DP2.off*1
395		427		459	LOCAL.off	491		523		555	MG1.off
396	VLV.ATERR.off*2	428		460		492		524		556	MG2.off
397	VLV.BOUT.off*2	429		461	HOLD.off	493		525		557	MG3.off
398		430		462	WAIT.off	494	OR2.off	526		558	MG4.off
399		431	AT2ERR.off	463	AT1.off	495		527		559	
400		432		464		496		528		560	
401	PV1ADC.off	433	CALB.E.off	465	A/M2.off	497	PVE1.off	529	TIME9.off	561	RDI101.off*1
402	PV1BO.off	434	UCALB.E.off	466		498	PVE2.off	530	TIME10.off	562	RDI102.off*1
403	RJC1ERR.off	435	USER.E.off	467		499	PVE3.off	531	TIME11.off	563	RDI103.off*1
404		436		468		500		532		564	RDI104.off*1
405	PV1+over.off	437	UPMD.off	469		501	PVE4.off	533	TIME12.off	565	RDI105.off*1
406	PV1-over.off	438	RANGE.off	470		502	PVE5.off	534	TIME13.off	566	RDI106.off*1
407		439	SETUP.off	471		503	PVE6.off	535	TIME14.off	567	RDI107.off*1
408		440		472		504		536		568	RDI108.off*1
409		441	PARA.E.off	473	CAS/LSP.off	505	PVE7.off	537	TIME15.off	569	RDI201.off*1
410		442	MODE.E.off	474		506	PVE8.off	538	TIME16.off	570	RDI202.off*1
411		443	FILE.E.off	475		507		539	WEND.off	571	RDI203.off*1
412		444		476		508		540		572	RDI204.off*1
413		445		477		509		541	PTEND.off	573	RDI205.off*1
414		446		478		510		542	PTEND3.off	574	RDI206.off*1
415	AT1ERR.off	447	SYSTEM.E.off	479	AT2.off	511		543	PTEND5.off	575	RDI207.off*1
416		448		480		512		544		576	RDI208.off*1

*1: UP750 only
*2: UP550 only

11.6 Status I Relays for Alarm, Timer, and Power-on Flags, and Others

The following table shows the configuration of status I relays for alarm, timer, power-on flag, etc.

I relay No.	Category	Description
577 to 592	Do not use	
593 to 608	Status	Current loop-1 PID number (Note 1) (same as D0009)
609 to 624		Current loop-2 PID number (Note 1) (same as D0025)
625 to 656		Current program pattern number (same as D0042)
657 to 672		1-second, 5-second, 10-second and 1-minute timers (Note 2)
673 to 688		Status of PV2 lamp and deviation lamps (Note 3)
689 to 704		Status of alarm outputs (same as D0036)
705 to 720		Status of PV event outputs (same as D0049)
721 to 2048	User area (Note 4)	Area where you can freely write and read

Note 1: The information of these I relays is represented by 4-digit binary codes, from 0000 (0 in decimal) to 1000 (8 in decimal), which are formed by the bit combination of four I relays. The lowest-numbered I relay in each set signifies the LSB.
Note 2: The 1-second, 5-second, 10-second and 1-minute timer functions are available with I relays only.
Note 3: This information represents the status of the UP750/UP550 s front-panel lamps. The relay turns on (flag 1) when the lamp is lit.
Note 4: Although the I Relay Map tables do not contain I relays 769 through 2048 within the user area, you can read from and write to these I relays by means of communication.

NOTE

- In I Relay Map tables, the areas with no I relay code names are not in use.
- Do not write to or read from these unused I relay areas; doing so may damage the internal data of UP750/UP550.

I relays except for the followings have the same codes as the bit construction of D registers.

I relay No.	Category	Description
0593 to 0596	PIDNO1.0 to PIDNO1.3	PID number for Loop-1
0609 to 0612	PIDNO2.0 to PIDNO2.3	PID number for Loop-2
0657 to 0661	TIM.1S to TIM.1M	1-second timer to 1-minute timer
665	V.GUE	Turns on when the valve position estimating type is selected (UP550 only)
0672 to 0674	PON, PV2	Power on, status of PV2
0681 to 0687	DEV1- to DEV2+	Deviation state for Loop-1 and Loop-2
0689 to 0693	ALO11 to ALO14	Status of alarm outputs

[TIP] • I relays 1 to 192, 593 to 656, and 689 to 720 have the same bit information, both in terms of code and contents, as the D registers for read-only information.
• Refer to section “4.4.1 Process Data Area (Read-only)” for the description.

I relays 593 to 693 store the on-off statuses of PID number, timer flag, power-on flags, etc.

NOTE

When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0657 to specify the TIM.1S relay (I relay No.: 0657).

Area for PID Numbers and the Statuses of Timer, Power-on and Alarm Flags, plus User Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
577		609	PIDNO2.0.st	641	SEGNO.0.st	673	PV2.st	705	PVEO1.st	737	
578		610	PIDNO2.1.st	642	SEGNO.1.st	674		706	PVEO2.st	738	
579		611	PIDNO2.2.st	643	SEGNO.2.st	675		707	PVEO3.st	739	
580		612	PIDNO2.3.st	644	SEGNO.3.st	676		708		740	
581		613		645	SEGNO.4.st	677		709	PVEO4.st	741	
582		614		646	SEGNO.5.st	678		710	PVEO5.st	742	
583		615		647	SEGNO.6.st	679		711	PVEO6.st	743	
584		616		648		680		712		744	
585		617		649		681	DEV1-.st	713	PVEO7.st	745	
586		618		650		682	DEV1Z.st	714	PVEO8.st	746	
587		619		651		683	DEV1+.st	715		747	
588		620		652		684		716		748	
589		621		653		685	DEV2-.st	717		749	
590		622		654		686	DEV2Z.st	718		750	
591		623		655		687	DEV2+.st	719		751	
592		624		656		688		720		752	
593	PIDNO1.0.st	625	PTNO.0.st	657	TIM.1S.st	689	ALO11.st	721		753	
594	PIDNO1.1.st	626	PTNO.1.st	658	TIM.5S.st	690	ALO12.st	722		754	
595	PIDNO1.2.st	627	PTNO.2.st	659	TIM.10S.st	691	ALO13.st	723		755	
596	PIDNO1.3.st	628	PTNO.3.st	660		692		724		756	
597	/REM/LCL2.st	629	PTNO.4.st	661	TIM.1M.st	693	ALO14.st	725		757	
598		630	PTNO.5.st*1	662		694		726		758	
599		631	PTNO.6.st*1	663		695		727		759	
600		632	PTNO.7.st*1	664		696		728		760	
601		633	PTNO.8.st*1	665	V.GUE.st*1	697		729		761	
602		634		666		698		730		762	
603		635		667		699		731		763	
604		636		668		700		732		764	
605		637		669		701		733		765	
606		638		670		702		734		766	
607		639		671		703		735		767	
608		640		672	PON.st	704		736		768	

*1: UP550 only

You can freely write to or read from the I relays 721 to 2048.

11.6.1 User Area

I relay No.	Category	Description
721 to 2048	User area	You can read/write data from/to the area for I relays 721 to 2048 via communication. That is, you can use the area freely without affecting the control function of UP750/UP550.

11.6.2 Timer Function

A timer function that repeats ON/OFF action at a constant time interval is available using I relays. One-second, 5-second, 10-second, and 1-minute timers are offered.

NOTE

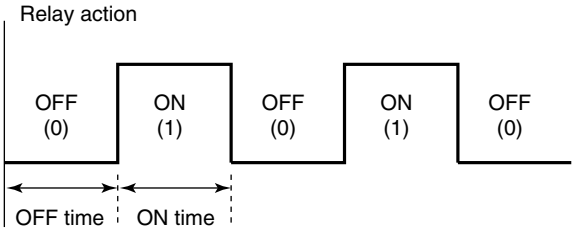
The timer function is set up using the optional LL200 PC-based Custom Computation Building Tool.

The following table shows the timer values and their corresponding I relay codes and numbers.

Timer value	Code	I relay No.	Description
1 second	TIM.1S.st	657	Repeats 1-second ON state and 1-second OFF state.
5 seconds	TIM.5S.st	658	Repeats 5-second ON state and 5-second OFF state.
10 seconds	TIM.10S.st	659	Repeats 10-second ON state and 10-second OFF state.
1 minute	TIM.1M.st	661	Repeats 1-minute ON state and 1-minute OFF state.

When assigned to a contact output, a timer signal can be output to an external device.

The timer I relay action is shown below.



12. Functions and Use of I Relays (UP350/UP351)

12.1 Overview

This chapter explains the functions and use of I relays.

I relays contain status information of errors, operation, and alarms. Contents of I relays can be read only by means of communication using a higher-level device. (Note that I relays have the same information as the D registers but with I relays some of the information is read-only.)

You can use I relays to perform:

- **Centralized monitoring through a display created with a higher-level device.**

12.2 Classification of I Relays

I relays are classified as shown below.

Table 12.1 Classification of I Relays

I relay No.	Type of status	Description	Remarks
1 to 192	Status	Bit information of I relays 1 to 192 are the same as that of D registers.	
193 to 384	ON status	Bit information of I relays 193 to 384 are the same as that of D registers.	When the status changes from OFF to ON, the corresponding relay is turned on for one control period.
385 to 576	OFF status	Bit information of I relays 385 to 576 are the same as that of D registers.	When the status changes from ON to OFF, the corresponding relay is turned on for one control period.

12.3 Status I Relays

The configuration of status I relay area is as shown below.

I relay No.	Category	Description	Remarks
1 to 16	Status	Input error (same as D0001)	
17 to 32		PV error (same as D0002)	
33 to 48		Do not use.	
49 to 64		Error in calibration values or parameters (same as D0035)	
65 to 80		Mode (same as D0008)	
81 to 96		Do not use.	
97 to 112		Do not use.	
113 to 114		PV event 1, 2 (same as D0012)	
129		Time event (same as D0013)	
130 to 160	Do not use.		
161 to 176			
177 to 192			

NOTE

- I relays 1 to 192 store on-off status information and are normally read for on-off status information.
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0019 to specify the RJCERR.st relay (I relay No.: 0019).
- In the area for I relays 1 to 720, it is prohibited to write data to I relays with blank cells in I relay map tables. If you attempt to do so, the UP350/UP351 may not operate properly.

Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
1	ADERROR.st	33		65		97		129	TME.st	161	
2		34		66		98		130		162	
3		35		67		99		131		163	
4		36		68		100		132		164	
5		37		69		101		133		165	
6		38		70		102		134		166	
7		39		71		103		135		167	
8		40		72		104		136		168	
9		41		73	RESET.st	105		137		169	
10		42		74	PROG1.st	106		138		170	
11		43		75	PROG2.st	107		139		171	
12		44		76		108		140		172	
13		45		77	HOLD.st	109		141		173	
14		46		78	WAIT.st	110		142		174	
15		47		79	AT.st	111		143		175	
16		48		80		112		144		176	
17		49	CALB.E.st	81		113	PVE1.st	145		177	
18	PVBO.st	50		82		114	PVE2.st	146		178	
19	RJCERR.st	51		83		115		147		179	
20		52		84		116		148		180	
21	PV+over.st	53		85		117		149		181	
22	PV-over.st	54		86		118		150		182	
23		55	SETUP.st	87		119		151		183	
24		56		88		120		152		184	
25		57	PARA.E.st	89		121		153		185	
26		58		90		122		154		186	
27		59		91		123		155		187	
28		60		92		124		156		188	
29		61	EEP.E.st	93		125		157		189	
30		62		94		126		158		190	
31	AT.E.st	63	SYSTEM.E.st	95		127		159		191	
32		64		96		128		160		192	

12.4 ON-Status I Relays

The configuration of ON-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
193 to 208	ON-Status	Input error (same as D0001)	
209 to 224		PV error (same as D0002)	
225 to 240		Do not use.	
241 to 256		Error in calibration values or parameters (same as D0035)	
257 to 272		Mode (same as D0008)	
273 to 288		Do not use.	
289 to 304		Do not use.	
305 to 306		PV event 1, 2 (same as D0012)	
321		Time event (same as D0013)	
322 to 352	Do not use.		
353 to 368			
369 to 384			

NOTE

- The ON-status I relays 193 to 384 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0211 to specify the RJCERR.on relay (I relay No.: 0211).

ON-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
193	ADERROR.on	225		257		289		321	TME.on	353	
194		226		258		290		322		354	
195		227		259		291		323		355	
196		228		260		292		324		356	
197		229		261		293		325		357	
198		230		262		294		326		358	
199		231		263		295		327		359	
200		232		264		296		328		360	
201		233		265	RESET.on	297		329		361	
202		234		266	PROG1.on	298		330		362	
203		235		267	PROG2.on	299		331		363	
204		236		268		300		332		364	
205		237		269	HOLD.on	301		333		365	
206		238		270	WAIT.on	302		334		366	
207		239		271	AT.on	303		335		367	
208		240		272		304		336		368	
209		241	CALB.E.on	273		305	PVE1.on	337		369	
210	PVBO.on	242		274		306	PVE2.on	338		370	
211	RJCERR.on	243		275		307		339		371	
212		244		276		308		340		372	
213	PV+over.on	245		277		309		341		373	
214	PV-over.on	246		278		310		342		374	
215		247	SETUP.on	279		311		343		375	
216		248		280		312		344		376	
217		249	PARA.E.on	281		313		345		377	
218		250		282		314		346		378	
219		251		283		315		347		379	
220		252		284		316		348		380	
221		253	EEP.E.on	285		317		349		381	
222		254		286		318		350		382	
223	AT.E.on	255	SYSTEM.E.on	287		319		351		383	
224		256		288		320		352		384	

12.5 OFF-Status I Relays

The configuration of OFF-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
385 to 400	OFF-status	Input error (same as D0001)	
401 to 416		PV error (same as D0002)	
417 to 432		Do not use.	
433 to 448		Error in calibration values or parameters (same as D0035)	
449 to 464		Mode (same as D0008)	
465 to 480		Do not use.	
481 to 496		Do not use.	
497 to 498		PV event 1, 2 (same as D0012)	
513		Time event (same as D0013)	
514 to 544	Do not use.		
545 to 560			
561 to 576			

NOTE

- The OFF-status I relays 385 to 576 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0403 to specify the RJCERR.off relay (I relay No.: 0403).

OFF-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
385	ADERROR.off	417		449		481		513	TME.off	545	
386		418		450		482		514		546	
387		419		451		483		515		547	
388		420		452		484		516		548	
389		421		453		485		517		549	
390		422		454		486		518		550	
391		423		455		487		519		551	
392		424		456		488		520		552	
393		425		457	RESET.off	489		521		553	
394		426		458	PROG1.off	490		522		554	
395		427		459	PROG2.off	491		523		555	
396		428		460		492		524		556	
397		429		461	HOLD.off	493		525		557	
398		430		462	WAIT.off	494		526		558	
399		431		463	AT.off	495		527		559	
400		432		464		496		528		560	
401		433	CALB.E.off	465		497	PVE1.off	529		561	
402	PVBO.off	434		466		498	PVE2.off	530		562	
403	RJCERR.off	435		467		499		531		563	
404		436		468		500		532		564	
405	PV+over.off	437		469		501		533		565	
406	PV-over.off	438		470		502		534		566	
407		439	SETUP.off	471		503		535		567	
408		440		472		504		536		568	
409		441	PARA.E.off	473		505		537		569	
410		442		474		506		538		570	
411		443		475		507		539		571	
412		444		476		508		540		572	
413		445	EEP.E.off	477		509		541		573	
414		446		478		510		542		574	
415	AT.E.off	447	SYSTEM.E.off	479		511		543		575	
416		448		480		512		544		576	

12.6 I Relays in User Area

The configuration of I relays in the user area is as shown below.

I relay No.	Category	Description
577 to 592	Do not use.	
593 to 608		
609 to 624		
625 to 656		
657 to 672		
673 to 688		
689 to 704		
705 to 720		
721 to 784	User area (Note)	Area where you can freely write and read

Note: Although the I Relay Map tables do not contain I relays 769 through 784 within the user area, you can read from and write to these I relays by means of communication.

NOTE

- In I Relay Map tables, the areas with no I relay code names are not in use.
- Do not write to or read from these unused I relay areas; doing so may damage the internal data of UP350/UP351.

NOTE

When specifying an I relay number for communication, begin the number with the character "I."

User Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
577		609		641		673		705		737	
578		610		642		674		706		738	
579		611		643		675		707		739	
580		612		644		676		708		740	
581		613		645		677		709		741	
582		614		646		678		710		742	
583		615		647		679		711		743	
584		616		648		680		712		744	
585		617		649		681		713		745	
586		618		650		682		714		746	
587		619		651		683		715		747	
588		620		652		684		716		748	
589		621		653		685		717		749	
590		622		654		686		718		750	
591		623		655		687		719		751	
592		624		656		688		720		752	
593		625		657		689		721		753	
594		626		658		690		722		754	
595		627		659		691		723		755	
596		628		660		692		724		756	
597		629		661		693		725		757	
598		630		662		694		726		758	
599		631		663		695		727		759	
600		632		664		696		728		760	
601		633		665		697		729		761	
602		634		666		698		730		762	
603		635		667		699		731		763	
604		636		668		700		732		764	
605		637		669		701		733		765	
606		638		670		702		734		766	
607		639		671		703		735		767	
608		640		672		704		736		768	

You can freely write to or read from the I relays 721 to 784.

12.6.1 User Area

I relay No.	Category	Description
721 to 784	User area	You can read/write data from/to the area for I relays 721 to 784 via communication. That is, you can use the area freely without affecting the control function of UP350/UP351.

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13. Functions and Use of I Relays (UM350/UM330,UM351/UM331)

13.1 Overview

This chapter explains the functions and use of I relays.

I relays contain status information of errors, operation, and alarms. Contents of I relays can be read only by means of communication using a higher-level device. (Note that I relays have the same information as the D registers but with I relays some of the information is read-only.)

You can use I relays to perform:

- **Centralized monitoring through a display created with a higher-level device.**

13.2 Classification of I Relays

I relays are classified as shown below.

Table 13.1 Classification of I Relays

I relay No.	Type of status	Description	Remarks
1 to 192	Status	Bit information of I relays 1 to 192 are the same as that of D registers.	
193 to 384	ON status	Bit information of I relays 193 to 384 are the same as that of D registers.	When the status changes from OFF to ON, the corresponding relay is turned on for one control period.
385 to 576	OFF status	Bit information of I relays 385 to 576 are the same as that of D registers.	When the status changes from ON to OFF, the corresponding relay is turned on for one control period.

13.3 Status I Relays

The configuration of status I relay area is as shown below.

I relay No.	Category	Description	Remarks
1 to 16	Status	Input error (same as D0001)	
17 to 32		PV error (same as D0002)	
33 to 48		Do not use.	
49 to 64		Error in calibration values or parameters (same as D0035)	
65 to 80		Do not use.	
81 to 96		Do not use.	
97 to 112		Alarm status (same as D0011)	
113 to 160	Do not use.		
161 to 176			
177 to 192			

NOTE

- I relays 1 to 192 store on-off status information and are normally read for on-off status information.
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0019 to specify the RJCERR.st relay (I relay No.: 0019).
- In the area for I relays 1 to 720, it is prohibited to write data to I relays with blank cells in I relay map tables. If you attempt to do so, the UM350/UM330/UM351/UM331 may not operate properly.

Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
1	ADERROR.st	33		65		97	ALM1.st	129		161	
2		34		66		98	ALM2.st	130		162	
3		35		67		99	ALM3.st	131		163	
4		36		68		100		132		164	
5		37		69		101	ALM4.st	133		165	
6		38		70		102		134		166	
7		39		71		103		135		167	
8		40		72		104		136		168	
9		41		73		105		137		169	
10		42		74		106		138		170	
11		43		75		107		139		171	
12		44		76		108		140		172	
13		45		77		109		141		173	
14		46		78		110		142		174	
15		47		79		111		143		175	
16		48		80		112		144		176	
17		49	CALB.E.st	81		113		145		177	
18	PVBO.st	50		82		114		146		178	
19	RJCERR.st	51		83		115		147		179	
20		52		84		116		148		180	
21	PV+over.st	53		85		117		149		181	
22	PV-over.st	54		86		118		150		182	
23		55	SETUP.st	87		119		151		183	
24		56		88		120		152		184	
25		57	PARA.E.st	89		121		153		185	
26		58		90		122		154		186	
27		59		91		123		155		187	
28		60		92		124		156		188	
29		61	EEP.E.st	93		125		157		189	
30		62		94		126		158		190	
31		63	SYSTEM.E.st	95		127		159		191	
32		64		96		128		160		192	

13.4 ON-Status I Relays

The configuration of ON-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
193 to 208	ON-status	Input error (same as D0001)	
209 to 224		PV error (same as D0002)	
225 to 240		Do not use.	
241 to 256		Error in calibration values or parameters (same as D0035)	
257 to 272		Do not use.	
273 to 288		Do not use.	
289 to 304		Alarm status (same as D0011)	
305 to 352	Do not use.		
353 to 368			
369 to 384			

NOTE

- The ON-status I relays 193 to 384 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0211 to specify the RJCERR.on relay (I relay No.: 0211).

ON-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
193	ADERROR.on	225		257		289	ALM1.on	321		353	
194		226		258		290	ALM2.on	322		354	
195		227		259		291	ALM3.on	323		355	
196		228		260		292		324		356	
197		229		261		293	ALM4.on	325		357	
198		230		262		294		326		358	
199		231		263		295		327		359	
200		232		264		296		328		360	
201		233		265		297		329		361	
202		234		266		298		330		362	
203		235		267		299		331		363	
204		236		268		300		332		364	
205		237		269		301		333		365	
206		238		270		302		334		366	
207		239		271		303		335		367	
208		240		272		304		336		368	
209		241	CALB.E.on	273		305		337		369	
210	PVBO.on	242		274		306		338		370	
211	RJCERR.on	243		275		307		339		371	
212		244		276		308		340		372	
213	PV+over.on	245		277		309		341		373	
214	PV-over.on	246		278		310		342		374	
215		247	SETUP.on	279		311		343		375	
216		248		280		312		344		376	
217		249	PARA.E.on	281		313		345		377	
218		250		282		314		346		378	
219		251		283		315		347		379	
220		252		284		316		348		380	
221		253	EEP.E.on	285		317		349		381	
222		254		286		318		350		382	
223		255	SYSTEM.E.on	287		319		351		383	
224		256		288		320		352		384	

13.5 OFF-Status I Relays

The configuration of OFF-status I relay area is as shown below.

I relay No.	Category	Description	Remarks
385 to 400	OFF-status	Input error (same as D0001)	
401 to 416		PV error (same as D0002)	
417 to 432		Do not use.	
433 to 448		Error in calibration values or parameters (same as D0035)	
449 to 464		Do not use.	
465 to 480		Do not use.	
481 to 496		Alarm status (same as D0011)	
497 to 544	Do not use.		
545 to 560			
561 to 576			

NOTE

- The OFF-status I relays 385 to 576 are turned on for one control period only when the status changes from “off” to “on.”
- When specifying an I relay number for communication, begin the number with the character “I.” For example, set I0403 to specify the RJCERR.off relay (I relay No.: 0403).

OFF-Status Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
385	ADERROR.off	417		449		481	ALM1.off	513		545	
386		418		450		482	ALM2.off	514		546	
387		419		451		483	ALM3.off	515		547	
388		420		452		484		516		548	
389		421		453		485	ALM4.off	517		549	
390		422		454		486		518		550	
391		423		455		487		519		551	
392		424		456		488		520		552	
393		425		457		489		521		553	
394		426		458		490		522		554	
395		427		459		491		523		555	
396		428		460		492		524		556	
397		429		461		493		525		557	
398		430		462		494		526		558	
399		431		463		495		527		559	
400		432		464		496		528		560	
401		433	CALB.E.off	465		497		529		561	
402	PVBO.off	434		466		498		530		562	
403	RJCERR.off	435		467		499		531		563	
404		436		468		500		532		564	
405	PV+over.off	437		469		501		533		565	
406	PV-over.off	438		470		502		534		566	
407		439	SETUP.off	471		503		535		567	
408		440		472		504		536		568	
409		441	PARA.E.off	473		505		537		569	
410		442		474		506		538		570	
411		443		475		507		539		571	
412		444		476		508		540		572	
413		445	EEP.E.off	477		509		541		573	
414		446		478		510		542		574	
415		447	SYSTEM.E.off	479		511		543		575	
416		448		480		512		544		576	

13.6 I Relays in User Area

The configuration of I relays in the user area is as shown below.

I relay No.	Category	Description
577 to 592	Do not use.	
593 to 608		
609 to 624		
625 to 656		
657 to 672		
673 to 688		
689 to 704		
705 to 720		
721 to 784	User area (Note)	Area where you can freely write and read

Note: Although the I Relay Map tables do not contain I relays 769 through 784 within the user area, you can read from and write to these I relays by means of communication.

NOTE

- In I Relay Map tables, the areas with no I relay code names are not in use.
- Do not write to or read from these unused I relay areas; doing so may damage the internal data of UM350/UM330/UM351/UM331.

NOTE

When specifying an I relay number for communication, begin the number with the character “I.”

User Area											
No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name	No.	I relay name
577		609		641		673		705		737	
578		610		642		674		706		738	
579		611		643		675		707		739	
580		612		644		676		708		740	
581		613		645		677		709		741	
582		614		646		678		710		742	
583		615		647		679		711		743	
584		616		648		680		712		744	
585		617		649		681		713		745	
586		618		650		682		714		746	
587		619		651		683		715		747	
588		620		652		684		716		748	
589		621		653		685		717		749	
590		622		654		686		718		750	
591		623		655		687		719		751	
592		624		656		688		720		752	
593		625		657		689		721		753	
594		626		658		690		722		754	
595		627		659		691		723		755	
596		628		660		692		724		756	
597		629		661		693		725		757	
598		630		662		694		726		758	
599		631		663		695		727		759	
600		632		664		696		728		760	
601		633		665		697		729		761	
602		634		666		698		730		762	
603		635		667		699		731		763	
604		636		668		700		732		764	
605		637		669		701		733		765	
606		638		670		702		734		766	
607		639		671		703		735		767	
608		640		672		704		736		768	

You can freely write to or read from the I relays 721 to 784.

13.6.1 User Area

I relay No.	Category	Description
721 to 784	User area	You can read/write data from/to the area for I relays 721 to 784 via communication. That is, you can use the area freely without affecting the control function of UM350/UM330/UM351/UM331.

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